UNLEARNING GENDER

Jelena Mönch

Institut für Medien - Interface Cultures

Unlearning Gender

(Re)using Computer Vision for Dissolving the Social Construct of Gender through Artistic Practices

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Institut für Medien - Interface Cultures

Jelena Mönch

Betreut von:
Univ. Prof. Dr. Manuela Naveau
Univ. Prof. Dr. Penesta Dika
MA. Sebastian Fitz-Klausner

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Abstract

This thesis analyses how computer vision manifests and reproduces gender binaries and how artistic practices are able to deconstruct gender binaries by reusing this technology. In particular, it focuses on automatic gender recognition systems because of their clear and pronounced reinforcement of the gender binary. Therefore, exploring how these systems function provides an insight into the social ideas, norms and assumptions that underpin the gender binary. Thus, by understanding their algorithmic categorisation, we have the opportunity to better understand ourselves as a society.

This thesis argues that AGR-systems follow a biologistic and essentialist logic, and that their supposed recognition is only partly based on physical characteristics and may rely more on gender stereotypes for their categorisation than studies have suggested. This indicates the social imprint of the systems, and a parallel can be drawn to the binary gendered perception and categorisation of people by people that is common in society, as both human and machine categorisation may be traced back to gender performance and gender stereotypical behaviour rather than physiological factors.

Artistic reuse, in turn, demonstrates the potential to be used as a political tool to stimulate social change and rethinking, thereby helping to denormalise harmful gender norms. This is explored and illustrated through the artwork "Unlearning Gender", an interactive installation that reuses OpenCV's AGR-system to deconstruct the binary gendered gaze of the machine, and to provide an example of what non-gendered personal perception might look like. Moreover, it also analyses the artistic approaches of other artworks in the context of challenging heteronomous social constructs and their reproduction through technology and compares them to "Unlearning Gender" to identify their strengths and weaknesses in achieving artistic and political goals.

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Table of Content

Glossary of Terms

Agender := Describes a person who identifies as not having a particular gender. (Koenig, 2019, p.256)

AGR-System := Describes a system that uses computer vision technology to categorise people by (binary) gender. (Scheuerman et al., 2019, p.1)

Androgynous := Describes a person who is perceived as not physically recognisable as female or male based on their dress or behaviour; presenting their gender as mixed or neutral. (Koenig, 2019, p.256)

Bias := Describes prejudice in favour of or against a person or group. Often refers to discriminatory treatment of marginalised groups.

BIPOC := BIPOC is an acronym for Black, Indigenous and People of Colour. It is used particularly in the United States to refer to the experiences of black and indigenous groups and to highlight solidarity between these groups. (Davidson, 2024)

Bounding Box := A geometric shape enclosing an object or group of objects in a digital image. This defines the position and size of an object, allowing it to be analysed or modified. (Cord Technologies, Inc., 2023)

Cis / Cisgender := Describes a person whose gender identity matches the sex they were assigned at birth. (Koenig, 2019, p.257)

Cisnormativity := Describes the assumption that all people are cisgender. This takes place on an individual, institutional or societal level. Can also describe the conviction that a cisgender identity is the superior gender identity and represents the only correct form of gender identity. (Koenig, 2019, p.257)

Computer Vision := Describes the analysis of visual data by computer. (Coppin, 2004, pp.605-606)

Data set := In the context of AI, a data set is a collection of data utilised to train and test models and algorithms. (Cord Technologies, Inc., 2023)

Exgendering := Describes an action that lets go of gender, does not ascribe gender and does not invoke gender images. (Hornscheidt & Oppenländer, 2019, p.24)

FA / automated facial analysis technology := A superordinate term for computer vision methods that automate the reading of the human face using machine learning techniques. (Scheuerman et al., 2019, p.2)

Feminism := Feminism is a movement that fights for gender equality, whilst taking into account the overlap and co-existence of other forms of discrimination against a person (intersectionality). However, this definition can vary as there are many different currents of feminism. But this definition of Feminism is how the term is used in the following thesis.

Genderism := Describes discrimination based on gender (Hornscheidt & Oppenländer, 2019, p.14). It differs from sexism in that sexism is associated with discrimination based on the gender binary, whereas genderism also refers to discrimination outside this binary.

Genderqueer := An umbrella term for an individuals whose gender identity does not follow or fit the gender binary (Dyer, 2022, p.27)

Gender Binary := The assumption that each individual is one of two genders, either male or female. (Koenig, 2019, p.258)

Gender Dysphoria := Term for the psychological distress experienced by people whose identity differs from the sex assigned at birth. (Koenig, 2019, p.259)

HCI := Human-Computer Interaction (Keyes, 2018, p.1)

Heteronormativity := Describes the assumption that all people are heterosexual (occurs at individual, institutional and societal levels). May also describe the view that heterosexuality is superior to all other sexual orientations. (Koenig, 2019, p.261)

Inter / Intersex =: Describes a person whose body (physical appearance of external sexual anatomy, hormone levels, chromosomes, external and internal reproductive organs) does not conform to the notion of binary gender, i.e. male or female. (Koenig, 2019, p.262)
Non-Binary := Refers to people whose gender identity is outside or beyond the gender binary. (Koenig, 2019, p.260)

Open source := Describes software that may be used, copied and distributed in both modified and unmodified forms. Hereby its source code is made available. (Gartner, 2024)

Pronouns := Describes a grammatical element that is used instead of a person's name or simile. Common pronouns in languages such as English or German are gender-specific and binary. For example, he/him/his and she/her/hers. Some genderqueer people use gender-neutral pronouns instead of these binary terms, such as they/them/their, ze/zir, co/cos, xe/xem/xyr, hy/hym/hyr. (Koenig, 2019, p.264)

Patriarchy := Describes a social system based on binary gender and a hierarchy in which masculinity is privileged and femininity is degraded. (Gilligan & Snider, 2018, p.11)

Queer := An umbrella term referring to gender and sexual minority identities. Literally translated, it means "strange" or "deviating from the norm", and was used as a derogatory term in the past, but is now being re-appropriated, especially by younger members of the minority. (Koenig, 2019, p.264)

Queering := Describes a method that arose from queer theory and describes the action of queer reading or queer reinterpretation of, for example, literature, films and much more.

Real time := Describes a system that responds to an external event, such as an interaction with the system, very quickly. (Gartner, 2024)

Trans / Transgender := Refers to the identity of a person whose gender identity is different from the sex assigned at birth. For example, a person who was assigned male at birth but identifies as a woman may use the term transgender (or trans woman) to describe their identity. However, the term can also be used as an umbrella term for identities that do not conform to the binary gender system. (Koenig, 2019, p.266)

Xenofeminism := A strain of feminism that takes a techno-materialist, anti-naturalist and gender abolitionist stance. In contrast to conventional feminism, it emphasises the use of technology as an activist tool. (Hester, 2018, pp.6-7)

Introduction

Binary gender is and remains a social category, a social guideline, and a seemingly undisputed and widespread "reality" that influences our self-perception, our development and our opportunities in life. It determines what we wear, what we eat, how we perceive emotions and how we are perceived, whether by humans or machines, often without any conscious decision or will on our part. Like a template, it superimposes itself on personalities, shaping them and becoming part of them. But why? And is this how we want to live? Without questioning this oh-so-natural norm of binary gender, where does it originate? How did it arise? And can we resist it?

In this thesis, I will discuss the extent to which these categories are woven into the technology that surrounds us, specifically whether the machine gaze wears gendered glasses. In doing so, I will address the key question of this thesis:

How does computer vision reproduce and manifest the social construct of binary gender and how could gender be deconstructed by (re)using this technology in artistic practices?

Here, my artistic practice, specifically through the joint artwork "Unlearning Gender" with Miguel Rangil, will be at the centre of this analysis. Through this project, we explored how bodies are ascribed to binary gender through algorithmic eyes and how we could think and perceive without the category of gender. "Unlearning Gender" is a project that speculates on alternative forms of categorization as a strategy of resistance against algorithmic-binary normalisation (Mönch & Rangil, 2023). By symbolically hacking the computer-vision interface, the project aims to escape gender and break with the techno-social binaries deeply rooted in technology (Mönch & Rangil, 2023A). This thesis covers the research and development process as well as the exhibition and workshop experiences of "Unlearning Gender.

In order to answer the mentioned guiding question, the first chapter, ***"The Social Construct of binary Gender",*** provides theoretical background on binary gender and its social construction. Thereby this chapter defines and differentiates what binary gender as a social construct actually is, and how and through what

it is constructed in the first place. It looks at the ways in which gender and sex are defined, explains the link between gender and identity, and describes the complexity of sex. Furthermore, it explores and describes scientific bias and knowledge production and how these interact with the gender binary, outlines the connection and history of society and binary gender, and analyses how binary gender is constructed and produced. This first chapter concludes by giving an insight into the personal possibility of deconstructing gender through a political concept of action.

In response to the first clause of the guiding question "How does computer vision reproduce and manifest the social construct of binary gender?", the subsequent second superchapter of this dissertation ***"AI/AGR as Manifestation"*** deals with the role of AI, in particular of AGR-systems, which belong to the subcategory of computer vision, in the construction and manifestation of binary gender. In this sense, the chapter deals with the connections between AI, society and knowledge production, describes AI subcategories and deals with biases in AI, focusing here on the emergence of gender biases in AI. It also deals with automatic gender recognition, analysing the basis in design, functionality and the data used in systems, as well as use cases and dangers, and possible design considerations and recommended and planned policy restrictions to counter these dangers.

The third superchapter and centrepiece of this thesis, ***"Unlearning Gender - Computer Vision in Artistic Practice and the (Re)shaping of the Social Constructs of Gender"*** addresses the second clause of the guiding question "How could gender be deconstructed by (re)using this technology in artistic practices?". It is divided into two subchapters: "Unlearning Gender - Deconstructing Gender through Artistic Practice" and "Media Historical Contextualisation of Unlearning Gender & Corresponding Artistic Practices in Comparison".
The first subchapter is dedicated to the presentation and analysis of the artwork "Unlearning Gender" and in this sense, deals with the topics of the political stance on facial recognition and AGR-systems of the artists, as well as their personal background, motivation and goals, the development of the project, how and why a (re)using computer vision is undertaken and limitations of the work. In addition, experiences gained through exhibitions and contact with audiences are discussed and an insight into personal observations with regard to gender performance and AGR-systems is given. Additionally, a future outlook for the project is given, concluding the subchapter.
The second subchapter contextualises the artwork "Unlearning Gender" in terms of media art history and analyses other artistic approaches to deconstructing gender by comparing the selection of artworks with it. In doing so, the artworks "Queer Technologies", "Facial Weaponization Suit", "[x]enoimage " and "See My Gender" are described, analysed and compared.
The final and fourth chapter of this thesis, "Conclusion", briefly summarises the previous chapters and presents the results and findings of the thesis. In addition, this chapter provides a future outlook for the "Unlearning Gender" project and discusses suggestions for further research.

Defining and Limiting the Scope of the Subject

To address the mentioned key question in the following, I will briefly define and narrow down the subject area here. For the purposes of this research question, the ***social construct of binary gender*** refers to the socially established binary gender system of "man" and "woman", as well as its construction in and by our society. Reference is made, among others, to the authors Emilia Roig and her work "Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution", Lann Hornscheidt and Lio Oppenländer with their joint work "Exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern" and Judith Butler with their book "Gender Trouble: Feminism and the Subversion of Identity", which represent key influences.

Moreover, this analysis within computer vision primarily focuses on AGR-systems as they are a strong example of the manifestation of binary gender in computer vision. However, image labelling systems "recognising" binary gender, which are also a very clear exemplary implementation of binary gender in computer vision, will not be discussed here, as they are not integrated into the artistic work "Unlearning Gender" and, furthermore, their partly different functioning would go beyond the scope of this thesis. An exception to this focus on AGR-systems is the artistic comparison of projects that partly consider technology and its social influence per se, as these are of great relevance for the contextualization of the artwork "Unlearning Gender" and for the discussion of

artistic practices in the field of the interaction of technology and society due to their historical classification and their unique artistic approach.
Deconstruction of gender, is defined in the sense of uncovering the construct as constructed as well as possibly breaking out of this construct. Here, gender is not intended to refer exclusively to binary gender, as other gender identities are also to be deconstructed.

In addition, ***(re)using computer vision*** refers to the use as well as alienation of computer vision technology from its actual purpose, which is why "re" is placed in brackets. Moreover, artistic practices in the context of this thesis are limited to my own artistic practices with the artwork "Unlearning Gender", as well as those of selected artworks.

Motivation & artistic Process driving my Choice of Theme

I am a media artist specialising in the creation of visually generative artworks that prioritise real-time interaction. My artworks explore a range of themes, including digital artificial life, psychological disorders, and social constructs and phenomena. Therefore, my choice of themes is always based on personal interest. Through the interactive installation "***Externalisation"***, for example, I am dealing with intrusive thoughts, the confrontation with them and the encouragement of conversations on the subject, as I have a personal connection to the subject due to my obsessive-compulsive disorder. My project ***"Lack of Love"***, which deals with social indeterminacy, glorification and the lack of structures for learning to love, also grew out of a personal frustration with the way society deals with love. Another interactive artwork I created is called ***"Microbial World"*** and again reflects my personal interest and fascination with digital life forms and digital artificial life that I have had since childhood, especially since my first Tamagotchi. My fascination with the invisible and my interest in the functioning of the technology that surrounds us can also be seen in the group artwork ***"Unseen Signals"*** in which I participated. In this way, ***"Unlearning Gender"***, the artwork that is the subject of this thesis, fits into the picture of my artistic background, in that it also questions the functioning of technology and was born out of a strong personal interest. My personal engagement with and questioning of binary gender played a central role in this, which I will elaborate on later in this thesis.
To summarise, it can be seen that the leitmotif of my artistic work is to educate and inspire social change, largely on the basis of personal experience. In doing so, I take very different paths to achieve these goals, for example, by addressing social taboos and making them tangible, breaking down social norms, or making processes visible, be they biological, digital, or social processes.

Chapter
01

The Social Construct of binary Gender

1.1 Introduction

In order to understand how the (re)use of computer vision in artistic practices can help to deconstruct the social construct of binary gender, we first need to clearly define and differentiate what binary gender as a social construct actually is, and how and through what it is constructed in the first place. Therefore, the following chapter, along with its subchapters, will differentiate, explain, discuss, and contextualise this currently still broad concept of binary gender and how it is perceived and established within society.

Beginning with the chapter ***"Sex & Gender"***, I delve into the frequently used sociological distinction between gender identity and biological sex, as well as illustrate a critique of these concepts. In the subsequent chapter, ***"Gender & Identity"***, I explore the significance of gender in contemporary identity formation and situate gender identities within the context of social constructions of gender and political agency. To portray the present and historical portrayal of our society regarding gender, I dedicate my analysis to sociologically recognisable structures in the chapter ***"Society & binary Gender"***. To address the question of the existence of binary biological sex and to unveil the foundations of gender categories, I examine biological facts and discoveries pertaining to biological sex in the chapter, ***"Complexity of Sex"***. In order to explain our social perceptions and alleged truths in relation to binary gender, I look at social knowledge generation and the biases intertwined with it in the following chapter ***"Scientific Bias & Knowledge Production"***. Furthermore I outline in the chapter ***"Construction & Production of binary Gender"*** how binary gender is produced and maintained by systems of our society. In the chapter, ***"Deconstructing Gender"*** I offer a perspective on how to address and resolve this construct, exploring the possibilities of personal action frameworks. In the concluding chapter ***"Summary & Findings"*** of this thesis, I will provide an overview of the insights gathered from the previous chapters and explain their connection to answering the main question of the thesis.

1.2 Gender & Sex

The distinction between sex and gender is a feminist concept that emerged in the 1970s as part of a feminist theories that critically examine gender as a natural fact. These theories define sex as biological, while anatomical sex and gender are considered part of gender identity or the social-cultural dimension of gender. With this separation, feminist theorists suggested that gender is a social construction and is not an inevitable consequence of sex. (Degele, 2008, pp.66-67)

However this feminist and sociological approach has its costs. Although this differentiation is useful in certain contexts and is essential to gaining a deeper understanding of the constructive trait of gender, it does not question sex as being socially constructed and produced as well (Degele, 2008, p.68). Inspired by Judith Butler's work, questioning the distinction between sex and gender has become a common practice in the sphere of sociology and feminist approaches to gender (Chancer & Watkins, 2006, p.106). Socially accepted biological "facts" of sex are questioned more and more and the constructive, social and interpretative backgrounds of sex are increasingly explored.

In her well known book "Gender Trouble" Judith Butler challenges the idea of sex as a natural fact, and forms the theory that sex and gender have been the same thing all along and that drawing a clear distinction between them would be impossible due to their interconnectedness and mutual dependence. In this context, she further explores whether sex could be as constructed as gender (Butler, 2021, p.24). By examining the definition of a social construction and investigating who, what, and how this construct is produced, she explores the reasoning these theories are based on (Butler, 2021, p.25). This leads her to the conclusion that the construction of gender is formed under the pressure of cultural norms and is nothing to be freely decided or formed by individuals (Butler, 2021, p.26). Therefore she critiques that the differentiation between sex and gender, which was driven by the motivation of questioning the determination of biology, is by its distinction now producing the same determination through culture being the determining factor instead of biology (Butler, 2021, p.25). By recognising the body itself as a construction and challenging the idea that gender is not the consequence of the body itself, Judith Butler opened up a new perspective on the discussion of gender, which forms the basis for my continued exploration of gender in the following thesis sections.

1.3 Gender & Identity

Gender is deeply personal - It is part of our identity and shapes how we understand ourselves. Challenging the base perception of reality is often percei-

ved as an attack on one"s self-perception, leading to resistance and rejection by many individuals. Therefore, questioning gender as a fundamental "fact" on our perception of reality is followed by society's broad unwillingness to do so. This movement is so prevalent that it could be compared to the rejection of questioning religion in the time of enlightenment. This fear might originate from a deep-seated fear of losing one's identity, a fear that is similar to questioning God, our societal gender order, beliefs, and way of thinking. Our society is based on binary gender, and therefore, questioning it has an enormous impact. (Roig, 2023b, p.207)

While the binary gender system may offer a sense of stability and security, it also imposes limitations and coercion, which can create restrictions on perception and decision-making. It is necessary to mention that gender cannot be thought of without the systematic violence it inhabits. As political identities are based on this structure of gender, they reinforce the framework of structural violence. The underlying assumption and acceptance of gender as a natural and unquestionable "fact" within political identities, leads to the reasoning that even though they have great political impact and are an important political tool for self-assertion in the society we currently life in, gender identites are not the final solution for the coercion and violence caused by gender in our society. Following this train of thought, gender as an identity must be let go in order to achieve a free and equal society. (Hornscheidt & Oppenländer, 2019, pp.13, 18)

1.4 Society & binary Gender

This chapter will focus on the role of gender in our society both past and present. In it, I will examine these social constructs in order to question and analyse the complexities of gender and the enduring impact they have on our lives. As this is a wide and complex topic there is no claim to completeness and the chapter will be limited to a fundamental systematic understanding.

Gender fundamentally structures our society (Roig, 2023b, p.206). Whether it's a visit to the doctor, an e-mail exchange, or an introduction to a new group - the question of gender is never absent and accompanies us in every life event. To think outside of this gender framework is difficult (Roig, 2023b, p.206), although in most situations this category has no importance or function other than to reproduce role models and stereotypes. Therefore, the question arises: Why and how did binary gender manifest as a social category (Roig, 2023b, p.206)?

The objective and reason behind the creation of binary gender find their roots in history. The once-flexible understanding of gender changed due to the identification of physiological differences between genders, leading to the ostensibly scientific justification of social distinctions (Tlusty, 2021, p.99). Thus, the one-sex model that prevailed and was widespread until the 17th century was replaced at the beginning of the 18th century by the two-sex model we know today (Fubel, 2008, pp. 4-7). Figures from across philosophy, public life, politics, and legal scholars during the 18th and 19th centuries solidified the supposedly "otherness" of women and the associated social differences (Tlusty, 2021, p.99). Women were dismissed by men of the enlightenment as politically inept, emotional and incapable of logical thought (Tlusty, 2021, p.99). This perception, among other factors, contributed to the widespread disenfranchisement of women (Tlusty, 2021, p.101). As this binary ideology became further entrenched in the 19th century, men exerted significant control over their wives' lives throughout the 20th century (Tlusty, 2021, p.101). For instance, until 1958 women in Germany were not allowed to open a bank account without their husband's consent; until 1977, they were only permitted to work with his permission; and until 1997, they could be raped within the marriage without prosecution (Tlusty, 2021, p.101).

However, the emergence of distinct social opportunities and rights for the sexes contributed to the growing emphasis on unambiguous categorization. Additionally, the institutionalisation of homophobia within the church as well as the condemnation of homosexuality, often enforced through harsh punishments, including the death penalty, also implied a binary gender system and thus the distinctness of gender. Therefore Gender has held profound implications on marriage, divorce, and the legitimacy of sexuality. (Voß, 2012, pp. 23-24)

Today, however, this legal situation has changed considerably in many countries and people who are socialised as female often have a better social position than those in the past. Nevertheless, just because this power relationship no longer officially exists as it did in the past, it does not mean that it no longer persists in society today. Thus, the dominance and rule of men continue to exist despite the lack of legal requirements. Eva von Redeckerhis names these claims to domination as "Phantombesitz" (Tlusty, 202, p.183) which can be translated to "phantom property" in english. This concept describes a division of powers which is still perceivable for those who were once on the side of domination as well as those who were subject to it. (Tlusty, 2021, pp.182-183)

To understand the workings of gendered domination and power dynamics, an understanding of social gender, a conceptual framework that shapes social practices, is crucial (Connel, 2012, p.161) . This multi-layered internal structure with different overlapping logics can be divided into three main parts: Power, production and emotional bonding structure (cathexis) (Connel, 2012, p.163). The first, power relations, consists of the subordination of women and dominance of men, leading to the patriarchal systems we live in today (Connel, 2012, p.164). The second, production relations, includes gender divisions of labour manifested in the allocation of tasks (Connel, 2012, p.164). This division of labour has the economic consequences of capital and wages being unequally distributed(Connel, 2012, p.164). The third, cathexis, draws a connection between heterosexuality and the social dominance of men (Connel, 2012, p.165).
But social gender structures and practices are linked to and interact with other forms of discrimination, like the social structures of race, class and nationality (Connel, 2012, pp.165-166). Consequently, the distinction between social gender and other social categories can only be drawn conceptually.

To summarise, an albeit short historical past of gender and society reveals a past rooted in essentialist and biologistic arguments, which established male dominance and female submission. Since a clear binary system was required to enforce these power relations, it gained in importance and was similarly strongly reinforced.

1.5 Complexity of Sex

As this social ideology and construction of gender dichotomy is based on a patriarchal understanding of biology (Degele, 2008, p.62), discovering the complexity of sex is necessary for critiquing it. Following this, I am asking the questions: ***Does biological sex exist? And is it binary?***

To address this questions, analysing animals and plants inhibiting our world is a helpful perspective (Roig, 2023b, p.218). Even if biology classes were taught differently, the majority of bodies and sexes do not fit into a binary model as biologist Joan Roughgarden discovered (Roig, 2023b, p.219). This dissonance is easily explained by questioning the context of how "nature" is represented and understood in our society. Scientific bias influences knowledge production and therefore also has an impact on our educational system and general understanding (Roig, 2023b, p.219).
To further explain the complexity of sex and to illustrate why the binary understanding of it is not a consequence of scientific discoveries, but the result of an interaction between the pressure of social norms and scientific practices, I will dive into the biological background of how sex is formed. Starting with the expression of sexual characteristics through sexual hormones and the interaction of many genes and hormones, which are leading to diverse sex development (Roig, 2023b, p.221).
To further understand how sex is formed during the first weeks of pregnancy, we have to start in the first six weeks of pregnancy. During this time, almost all foetal genitalia have the same structure. They consist of a genital tubercle, a genital fold, a genital bulge and a urethral fold. These basic elements form the standardised genital hardware of the later developed genitalia, which are further configured and differentiated by hormones after the 6th week of pregnancy. Therefore, we all consist of the same parts, just put together in different way. This for instance is visible by every feature of the external genitalia having a homologous in the "opposite sex", which derived from the same fetal tissue. The penis and the clitoris for example, both developed out of the genital tubercle and consequently have a lot of biological similarities, like being an erectile tissue. (Nagoski, 2017, p.37)
During the time 7th and 12th week the further sex development this genital hardware undergoes its configuration under the influence of specific hormones and genetic factors, leading to the formation of reproductive systems (Carachi, 2019, p.427). But our bodies are not manufactory machines and hormones as well as other influential factors are not like an on and off switch for producing either female or male sex. Like in many other aspects, life is more complicated than this and the configuration of this standardised genital hardware can turn more than two ways. Caused by a large number of different genetic, hormonal and morphological variations, the process of sexual differentiation may lead to large variations of biological sex (Carachi, 2019, p.428). One example of this broad variation of sex is the occurrence of people having male or female interpretable external sexual characteristics despite internal gonads (like testicles or ovaries) of the "opposite sex" as understood in binary thinking (Roig, 2023b, p.221).
Considering this biological context, it's no wonder that biological sex has such broad variations in expressions of genitalia, even though their functions exhibit

similarities. As the development of sex as well as the existence of biological variety indicates a great diversity, sex should be understood as a natural spectrum rather than as pathologies (Roig, 2023b, p.222). It is necessary to note that these biological variations are only the beginning. Any kind of variation can be genetic, anatomical, hormonal as well as psychological and social (Roig, 2023b, p.222).

Returning to the original question of if biological sex really exists, it is important to mention that according to the author Emilia Roig, the answer to this question is yes, although she clarifies that it nevertheless does not correspond to a binary order. Sex, so she says, is not a characteristic based on fundamental differences and is also nothing fixed, but a part of a process. She illustrates the processuality of sex by explaining that not only anatomy is influencing it but also biological time. Puberty, menstruation, menopause - our bodies are changing constantly as we age. Even the so called "Sex chromosomes" seem to change due to biological time as the y- chromosomes of men are dissolving in old age. But our bodies also react to external factors, including social factors like gender norms. (Roig, 2023b, p.222)

However, there are also opposing voices on the binary nature of biological sex. For example, in their article "Biological sex is binary, even though there is a rainbow of sex roles, Denying biological sex is anthropocentric and promotes species chauvinism", authors Wolfgang Goymann, Henrik Brumm and Peter M. Kappeler describe how, according to their definition of binary biological sex, it does exist (Goymann et al., 2023, p.2, p.4). But at the same time they also describe that the biological sex of an individual does not have to be constant, that the definition of biological sex is not based on chromosomes, genes, hormones, vulva or penis, etc. and that sex is not the same as sexual differentiation or sexual development, which can also vary in the sense of the article (Goymann et al., 2023, p.2, p.4, p.5). Furthermore they define female organisms as those that produce large gametes, called eggs, and male organisms as those that produce small and usually motile gametes, called sperm (Goymann et al., 2023, p.2), which does not exclude the findings on biological sex that they mention. In this interpretation, they don't follow the socially dominant notion of binary biological sex mentioned above, whereby their definition allows for the conclusion that binary biological sex exists. However, their definitions contradict those commonly used and, depending on the interpretation, could also be framed as a refutation of the existence of binary sex. Thereby in conclusion, there is no fundamental disagreement here, just two different definitions and interpretations of binary biological sex.

We come to understand that a stable, clear, and constant form of binary sex, which we often assume exists and is treated in our society as if it were a scientific fact, is not present in a biological sense. Moreover, from a purely anatomical and physiological perspective, gender plays a less formative role than is often assumed (Roig, 2023b, p.223). Emilia Roig goes so far as to say that if many people stood naked next to each other, we would be able to see the diversity of bodies that goes far beyond the genitals (Roig, 2023b, p.223). Sex therefore represents a biological and constitutional category that greatly simplifies our actual physiology (Roig, 2023b, p.223) and should be questioned as a significant factor in almost all areas of our lives.

In this context, the existence of differences is not negated, but rather a broad view of cultural variations is created, challenging the emphasis on specific traits and norms. Thus, the question of whether biological sex exists can be answered with a clear yes, as already stated by Emilia Roig, whereby we must speak here of a multiplicity of biological sex, as well as sex without clear categorical boundaries but with fluid transitions. These have been reshaped by social constructs into a binary system of male and female, but do not correspond to any physiological reality.

1.6 Scientific Bias & Knowledge Production

As mentioned in the previous chapter, "Complexity of Sex" science and other ways of knowledge production are not as neutral as often assumed by our society. In this chapter, I will focus on the background of our current representation of gender through science and the direct impact of its biases on our current understanding of gender. Accordingly, we will answer the question of why and how gender is still perceived as binary in our society, despite the previously explained variety of sex.

Science as we know it today classified nature into strict universal categories. On on one hand, it built the base for many great discoveries, but on the other hand, it also led to a very simplified and partially misleading representation of the biological complexity of our world. Additionally, it is important to recognise another guiding motivation behind the reduction of biological complexity:

to scientifically establish male, white heterosexual superiority. (Roig, 2023b, pp.213, 218)

This influenced and still influences our production of truth, albeit indirectly and only recognisable in historical context. One example of how socialisation affects the emergence of biased scientific knowledge is the misinterpretation of the so called "sex"chromosomes. In her book "Sex itself - The Search for Male and Female in the Human Genome," biologist Sarah Richardson explains how genetic researchers in the 1960s interpreted chromosomes X and Y as "sex chromosomes" for women and men, although scientific evidence for chromosomal determination of sex was limited, inconsistent and contradictory (S. S. R. Richardson, 2013, p.34). She explains that little evidence exists for the Y chromosome making the difference between male and female and that studies attempting to establish this link do not take variables such as age, weight, and hormones into account, although they are known to influence gene expression (S. S. R. Richardson, 2013, p.34). She further explains that chromosomes do not obey any rules that exist from species to species and that they do not provide adequate indicators for determining sex in many species (S. S. R. Richardson, 2013, p.34). But even with the understanding of XX for female and XY for male, there is no result of binary gender, as chromosomal sex does not determine phenotypic sex or gender self-perception (S. S. R. Richardson, 2013, p.34).

But if there is no clear evidence, why did this "knowledge" emerge and take hold? According to Sarah Richardson, this misinterpretation arose as cultural and political imperatives had greater influence than objective biological facts, including the motivation to biologically and scientifically anchor the binary gender order (Roig, 2023b, p.221). Still today, we hold on to the idea that Y- chromosome = masculinity and X-chromosome = femininity despite evidence (S. S. R. Richardson, 2013, p.35), which may be rooted in our deep trust in science as a neutral truth-producing institution as well as our inner reluctance to question the worldview we have internalized. As we see in the previous example, biology is used to justify certain behaviours or social phenomena, which has a great tradition in European science (Roig, 2023b, p.215). Slavery and colonialism have also been legitimised with the help of scientific alleged findings from biology (Roig, 2023b, p.215) and still play a major role in social perception in the context of racism and other forms of discrimination. This biological essentialism (the idea that human behaviour is biologically programmed and innate) was and is a political project with the aim of "naturalising" and thus legitimising inequalities in society (Roig, 2023b, p.217).

One example of how biology is actively instrumentalised for the enforcement of power relations is the perspective on animals. Here, the view of phenomena in nature is biased and selectively exploited as an argument to push through and defend patriarchal, racist, ableist, homophobic and transphobic agendas. An example of this instrumentalisation is the fact that rape was for a long time not punishable by law, partly because in the animal world reproduction often occurs by force, leading some scientists to regard rape as a "natural" form of reproduction. However, the selectivity of this instrumentalisation quickly becomes clear when we look at other phenomena in nature. In the animal world, for example, it is quite common for animals to eat their young, e.g. hedgehogs and hamsters. Nevertheless, this behaviour is not accepted among humans in our society. (Roig, 2023b, p.216)

But also, the dragging up of the alleged way of life of prehistoric humans, which spreads a narrative of supposedly clear binary gender role formations and exercise at that time (men = hunters, women = gatherers), is commonly utilised for vindicating masculine dominance. In this context, it should be clarified that although this narrative is widely spread in society, binary gender was not a central characteristic and did largely not exist in 98 percent of humanity's life. Therefore, social roles were not solely defined by gender, and masculine dominance cannot be attributed to an inherent "nature". Rather, from the Enlightenment until well into the 20th century, the myth of nature was actively constructed by white men through manufactured knowledge, truths and narratives. (Roig, 2023b, p.217)

Although these are just a few examples of scientific biases and their contribution to the creation and maintenance of gender as a system-giving category, they show the structure and direction of established "truths" about gender and how they are little questioned or set right even in our society today. Thus, the social structures in which we live today should not be considered without the background of knowledge production to enable a questioning of them.

1.7 Construction and Production of binary Gender

After illustrating the background of why biases in knowledge production are

part of the construction of binary gender in our society, this chapter will utilise comparisons to demonstrate the constructed nature of binary gender and elaborate on aspects and structures involved in the production and maintenance of its system.

As explained in the previous chapters, binary gender does not consist of biological facts or natural characteristics but is the product of a learned perception of the world (Hornscheidt & Oppenländer, 2019, p.178). In order to gain a different perspective on our socially established and learned thought structures, we could ask why hormone levels and gene structure are important for the social classification of people and compare these parameters to other "biological facts" like a person's ankle length (Hornscheidt & Oppenländer, 2019, p.179). If we imagine a world where ankle length dictates life paths, assigning different characteristics and social roles based solely on who has longer or shorter ankles, the absurdity of biological essentialism in our society becomes more obvious. By applying this concept of the binary gender in our society to other physical attributes, we realise that the drastically life-influencing social consequences of this can hardly be reasonable. Nevertheless, we live in a world in which hormonal levels rule what kind of chess tournament a person is allowed to compete in.

This way of relating physical factors and justifying social injustice can also be found in the social category of "race". Although social categories such as gender and race do not exist in a biological sense, they do exist in a socio-political sense. These social categories, although political fictions, create tangible and often substantial conditions. In this context, Colette Guillaumin appropriately notes that although races do not exist, they still kill people. Not in the context of race, but in the context of gender, Andrea Dworkin states a very similar perception: that even if the system of gender polarity really exists, it does not correspond to any truth. Thus, many commonalities can be found in the social construction of race and gender. (Roig, 2023b, pp.207-208)

Another way of illustrating the fictional construction of binary gender is through a comparison with money. Like binary gender, money can be interpreted as a construct and not a physical reality, as most money is not visible or intangible. This concept of money is protected and maintained by various institutions, such as the police, the military, the courts, legislation and businesses. And here another parallel emerges, as binary gender must also be institutionally enforced. This happens through registry offices, hospitals, schools, courts, the labour market, sports industry, legislation, corporations, parents and many more. Therefore, both the concept of money and the construction of binary gender must be artificially produced and maintained since they are not inherently present in our society. (Roig, 2023b, p.208)

As mentioned in the previous comparison of money and binary gender, binary gender is established through various social institutions. In my opinion, this production of the construct of binary gender is a very important aspect in order to be able to understand why this is not a "naturally" created system but rather a human-made one. In the following chapters, I will discuss this construction, focusing on the crucial role that computer vision plays alongside technology in its construction.

In order to recognise the additional methods employed for the production and construction of gender, it is also helpful to ask to what extent the widespread narrative that binary gender is natural contributes to the binary gender system. Throughout history and even today, the concept of "nature" has been used as a weapon against certain population groups or behaviors. For instance, individuals with genders beyond the binary, such as trans, non-binary, and intersex persons, are systematically pathologized by claiming their existence would be unnatural, although they were born and have survived evolutionary processes. (Roig, 2023b, p.209)

To elaborate on this pathologization, let's consider the example of societal treatment of intersex individuals. Starting with the official medical term for the gender development of intersex persons as "Disorders of Sex Development" (DSD), which, as criticised by intersex advocacy groups, depicts a disorder (Voß, 2012, pp.10-11). In order to treat this alleged disorder, a medical treatment programme for intersex individuals, known as the "Baltimore Treatment Program," came into existence and found international application (Voß, 2012, p.12). This programme encompassed treatment recommendations like surgical and hormonal interventions to enforce gender clarity (Voß, 2012, p.12). The premise was that intersex individuals could develop homosexual desires and behaviours, and avoiding this was a central argument (Voß, 2012, p.13). However, these treatments are heavily criticised by intersex advocacy groups, as they perceive them as traumatic experiences of violence and comprehensive statistics also indicate that a majority of intersex individuals suffer from the psychological and physical consequences of the operations (Voß, 2012, p.17).

Why, then, have these treatments been and continue to be applied? What can justify inflicting such suffering on a population group?

Like explained before, many institutions are actively forming the construct of binary gender and medicine is one of these devices. In this context, it's essential to view medicine and society as interconnected. Since living in a third gender category is not socially accepted, there is a compulsion for gender assignment, which also affects medical perspectives and procedures. Consequently, the societal influence on medicine is so significant that medicine establishes the binary gender norm through physical and physiological interventions. These processes of production play a crucial societal role, are grounded in religious arguments, and still shape modern population policies. (Voß, 2012, pp.22-23)
Thus, binary gender, which is considered "natural", must be institutionally and legally enforced and controlled.

Shouldn't "natural" happen unconstrained?

Nevertheless, there are established criteria that confirm and, if necessary, verify gender, and people whose bodies do not clearly fit the gender categories are conformed through violent medical and administrative systems.
Thus, until 2021, it was still common practice to operate on intersex babies after birth and the violent categorization of them into the binary gender system was socially more important than the right to physical integrity and self-determination. (Roig, 2023b, p.210)
Additionally, not only is the societal definition of "natural" subjective, but the definition of health itself is also not an objective norm. This term is a historical, social, and biopolitical construct frequently used as a tool for the separation and suppression of unwanted groups and behaviors. For instance, transgender identity was classified as a mental disorder by the WHO until 2019. (Roig, 2023b, p.212)
The active use of the terms "natural" and "health" has been and continues to create otherness and abnormality around all gender variations, thereby establishing binary gender as the absolute norm. The establishment of this norm, in turn, is a significant component of the construction and enforcement of binary gender itself.

A further aspect of gender construction involves the societal pressure on female socialised people to remove body hair. This is rooted in racism, as "pure," hairless white female bodies have been and continue to be used to uphold white superiority (Roig, 2023b, p.227). Societal norms often interpret hairy legs, facial hair, armpit hair, and other forms of body hair as masculine, deeming them impure in individuals socialised as female as they deviate from the traditional image of femininity. Despite societal changes in recent years, the image of the hairless, smooth white woman remains prominently featured in the media.
Another fundamental component of the construction and production of binary gender is the performativity of gender itself. In her book "Gender Trouble: Feminism and the Subversion of Identity" Judith Butler speaks of gender as free attributes rather than the traditionally conceived noun, which describes gender not as a fundamental component but as a self-composed entity made up of practices. They further state that gender is not merely a natural given but is actively shaped by social interactions and societal norms, which makes it performative. Termed for this theory is the phrase "gender is always a doing" (Judith Butler, 1990, p.71) with which they coined the concept of "doing gender" and established the idea of constructing gender through performative practices. Moreover, they elucidate that it's not gender identity responsible for the performance of gender; instead, these performative practices create gender identity. (Butler, 1990, p.71)
So much for the theory of the performativity gender, but how does this translate into practical application? Answering this question is challenging as there are countless possibilities for gender expressions, varying from social, cultural and individual contexts, making it impossible to list them all. However, there are central, frequently used codes, such as clothing considered gender-conforming (e.g. dresses for women) or gender stereotypical social interactions like a high-pitched voice, crossed legs, and the constant smile often associated with individuals socialised as female. Also, gender-stereotypical hairstyles, such as long hair for those socialised as female and short hair for those socialised as male, can be gendered expressions. While many of these somewhat conservative and gender-stereotypical expressions of gender are gradually being questioned more in society, they still play a significant role in constructing differences between genders and, therefore, contribute to the reinforcement of the binary gender construct.
A striking illustration of gender construction is a twin duo named Liv & Maddie that became popular on Instagram (@thewalters2win). Although, in theory,

they look very similar as identical twins, their radically different gender performances lead to distinct perceptions within their fanbase. Performative practices like clothing, make-up, expressions, and body movements result in one of them being perceived as masculine and the other as feminine, despite their strong physical similarities. Even though they wear the same outfit with slightly different accessories and use slightly different body language, their gender performances seem contrasting.

As previously mentioned, the construction and production of binary gender encompass numerous systematic components enforced by institutions such as medicine, schools, and politics, but also involve individual practices of gender expression and social interactions. It is crucial to highlight that the implementation and stabilisation of binary gender result from the interaction of various larger systemic regulations and individual actions within society.

1.8 Deconstructing Gender

In this chapter, I will present and explain a technique for dismantling gender, drawing inspiration from the book "Exit Gender" authored by Lann Hornscheidt and Lio Oppenländer. To acheive this, I will first introduce the concept itself, followed by a practical exploration of its applications and illustrative examples. Since the artistic work "Unlearning Gender," discussed in the upcoming chapters, stems from this concept, it's essential to elucidate and explore it at this point.

"Exit Gender" is a form of intervention in the structural violence of the binary gender system (Hornscheidt & Oppenländer, 2019, p.15) . With violence is meant the violence of the social ascription through the category of gender, which is also established by violence (Hornscheidt & Oppenländer, 2019, p.15). In this constructivist and power-critical concept (Hornscheidt & Oppenländer, 2019, p.22), the focus is on the notion that gender operates as a system and should be dismantled without ignoring the structure of violence it creates (Hornscheidt & Oppenländer, 2019, p.16). It is a political movement away from gender, which does not follow the purpose of establishing a new identity, as gender identities accept the framework of gender (Hornscheidt & Oppenländer, 2019, p.23). Instead "Exit Gender" is a concept of action that translates into political, executable action (Hornscheidt & Oppenländer, 2019, p.37). The underlying premise of the concept is that one can only act or react to societal structures through actions taken in society and a change in perception and therefore focuses on one's own agency and everyday political action (Hornscheidt & Oppenländer, 2019, p.38).
The concept itself comprises of two main action strategies: Exgendering and naming genderism. Exgendering describes actions that let go of gender, do not reiterate gender images and avoid gender ascriptions. In this process, individuals are exgendered through perception and language and gendering is entirely let go, with no allowance for genderism. However, in this process, there is a reluctance to de-gender individuals, implying a denial of gender identity by perceiving people solely through a central form of discrimination. An illustrative instance of discriminatory de-gendering is the societal treatment of individuals with disabilities. They are often perceived solely through their disability and not as gendered individuals, as is evident in the example of public toilet arrangements that separate women’s, men's, and disabled toilets. (Hornscheidt & Oppenländer, 2019, pp.24-25)
The second part of the action concept, naming genderism, consists of the perception and naming of structures of violence. This section therefore devotes full attention to genderism and the recognition and naming of it in everyday life, aiming to perceive structural and systematic gender discrimination despite the act of de-gendering. (Hornscheidt & Oppenländer, 2019, p.26)
Furthermore, the authors describe the concept of "Exit Gender" as occurring on an argumentative and perceptual level, as well as on a level of communication and exchange, but not on the level of body symbolism (Hornscheidt & Oppenländer, 2019, p.32).

But how does the application of this concept work in concrete day-to-day situations? Exgendering is applied as a direct and clear identification without the detour of binary gender categorization. So instead of perceiving a pregnant woman, one would perceive a pregnant person. This mode of direct perception detaches activities, behaviour, and appearance from gender and therefore abandons the individual framework of perceiving gender. In doing so, the authors recommend that you practice this way of perceiving reality, both in yourself and others). Moreover, they suggest starting with observing yourself and analysing when, where, and how you create, evoke, accept, and attribute gender. This includes how your perception of people invokes gender, is gendered, and is guided by gender categories. To further deepen this analysis of your own

perception regarding gender, ask yourself the following questions: Why do you think a person is female or male? When do you think you can perceive, hear, or read the gender of someone? (Hornscheidt & Oppenländer, 2019, pp.179, 183-184)

Often, we tend to "see" gender in the physical aspect of a person, as it is societally regarded as an indicator of gender. Some aspects of how gendered ascriptions are made on a physical level are the body size of a person, their body form, the presence or absence of body hair, as well as body language and movement patterns. As before mentioned, typical body hair on which gender is interpreted is facial hair, hairy legs and armpit hair. In the case of body language and movement patterns being read as gendered, it is important to note that this may also refer to the movement-based integration of individuals into social spaces. Illustrative instances are how a person moves towards another person, how they position their hands, how they move in physical contact with another person, and how they sit in public spaces, naming only a selection of nonverbal cues. (Hornscheidt & Oppenländer, 2019, pp.184-185)

Yet, it's not just the physical body that matters in ascribing gender; the interpretation of visual secondary indicators also shapes our perception of gender. These indicators can be objects and utensils that lead to gender-related conclusions, like hats, underwear, jewellery, shoes, and jumpers, but also items like pens, notebooks, umbrellas, or phone cases. The list is never ending. Interestingly, this gendered interpretation of utilisations does not require the presence of their owner. Imagine you find a silver ring with fine floral ornaments engraved and decorated with a sparkling gem. Wouldn’t you ascribe its owner's gender after the first second of discovering it? (Hornscheidt & Oppenländer, 2019, pp.186-187)

Additionally, our auditory and olfactory levels of perception are part of perceiving our environment as gendered. How a person laughed, the intonation, vocal pitch and loudness of their speaking, their steps and the clacking of their shoes—often, without thinking, we quickly form a gendered image of a person in our minds without ever having seen them. And even hygiene products like soaps, perfumes and shampoos convey an alleged expression and thereby, a perception of a "masculine" or "feminine" scent. (Hornscheidt & Oppenländer, 2019, p.187)

All these levels of perception would often already separate us from a gendered interpretation of a person, but the combination of all of them enables an unconscious framework of perception and direct interpretation and ascription of gender, as if it were by instinct. But this perceived and supposed identification of gender is the actual construction of gender itself. (Hornscheidt & Oppenländer, 2019 p.188)

The second part of the concept of naming genderism is in contrast to the first conceptual part, dealing with gender on a structural level. The focus is on the criticism of gendererist structures of violence, which is realised through the active naming of genderism. It is essential to recognise that letting go of gender ascriptions and naming generism cannot be practiced separately but should be approached together. (Hornscheidt & Oppenländer, 2019, p.190)

1.9 Summary & Findings

Finally, several conclusions can be drawn from the previous chapters.

The first conclusion of this part of the thesis is the possible constructedness of sex and gender. Thereby the separation of sex and gender by feminist theorists who define only gender as constructed is critiqued. Instead, the assumption is strengthened that the body itself is a construction and that both gender and sex are not the consequence of the body itself, whereby sex is just as constructed as gender, making their strict distinction less relevant.

Furthermore gender identities are not seen as the final solution to the coercion and violence caused by the category of binary gender in our society, as gender identities, while an important political tool, are based on a binary gender structure and thus accept its framework of structural violence. Nevertheless they are seen as a step of political empowerment that has to be taken in the face of today's social reality, in order to be overcome at some point.

In addition, the portrayal of our society in terms of binary gender reveals that it has a past strongly rooted in essentialist and biologist arguments, which have been and continue to be used to establish male dominance and female subordination. Here it is outlined that in order to enforce these power relations, a clear binary system was required, which gained in importance and became correspondingly strongly established.

With regard to biological sex, binary gender is presented as the result of an

interaction between the pressures of social norms and scientific practices. In this context, it is described that biological sex exists, but that it does not correspond to a binary order. Rather, it is stated that there is a great diversity of biological sex, which has no clear categorical boundaries but fluid transitions. Moreover, biological sex is in this context described as something that is not fixed, but is a process.

Moreover, the conclusion is drawn that the binary system of male and female does not follow a physiological reality but is socially constructed. This is because the unambiguous and fixed form of the gender binary that we often believe to exist, and which is taken as scientific fact in our society, does not actually occur in a biological sense.

This establishment of supposedly scientific facts is attributed to scientific bias, which influences our production of truth and contributes to the creation and maintenance of gender as a systemic category. After all, socialisation also influences the development of scientific knowledge and can lead to distortions. However, the motivation to establish the binary gender order biologically and scientifically should not be ignored. Indeed, as can be seen not only in the field of gender, biology is often instrumentalised to justify certain behaviours or social phenomena.

A further conclusion ist that the construction and consolidation of binary gender is the result of the interplay of various larger systemic arrangements and individual actions within society. Thereby, besides science and its knowledge production, gender is also constructed and maintained by other institutions and structures in our society. Examples include institutions such as medicine, schools and politics, although individual practices of gender expression and social interactions also contribute to their production and maintenance.

With regard to the possibilities of a personal framework of action to counteract these mechanisms and thus contribute to the deconstruction of gender, the power-critical action concept "Exit Gender" is explained. This consists of two main strategies; on the one hand exgendering and on the other naming genderism. Exgendering corresponds to letting go of gendering through personal perception and language and naming genderism refers to continuing to perceive and address genderism despite this action.

These differentiations and analyses of the social construct of binary gender and its forms of construction and maintenance, which have been undertaken and summarised here, are fundamental with regard to the key question "How does computer vision reproduce and manifest the social construct of binary gender and how could gender be deconstructed by (re)using this technology in artistic practices?" in order to first grasp what may be reproduced here and thus also enable its deconstruction. These insights therefore form the basis for the further analysis of computer vision systems, as well as the investigation of artistic practices that use technology such as these to deconstruct binary gender.

Chapter
02

AI/ARG as Manifestation

2.1 Introduction

Having defined the social construct of binary gender in the previous chapter and described the approaches of deconstructing gender, we will now focus on the role of AI (Artificial Intelligence) and more specifically, automatic gender recognition (AGR) systems, which are part of the subcategory of computer vision, in the construction and manifestation of binary gender. As the artwork "Unlearning Gender" is a critique of these AGR-systems and thus also refers to AI and our social interaction with it, I will contextualise, analyse and criticise these technologies in the following chapters and present possible solutions for dealing with them. Furthermore this subchapter also aims to explore the dynamics of power and social pressure through AGR-systems in the context of binary gender. In order to do so, this section will start with the section ***"AI, Society & Knowledge Production"***, which describes the societal view of AI and explored the connections and mutual influence of AI, knowledge production and societal truth. This is followed by the chapter ***"Subcategories of AI"***, in which the various categories of AI, their interconnectivity and their most important methods are introduced to provide context for understanding AGR-systems in the wider context of AI. The following chapter ***"Biases in AI"*** describes the nature of discrimination in the context of AI and presents the power and consequences of biases, as well as the emergence of gender biases in AI and possible solutions for them. Subsequently, the chapter "***AGR-Systems"*** deals with these systems in more detail. In this section, the biases in the design and functionality as well as the biases in the data selection of the systems, are presented and analysed. In addition, the use cases of the systems, the resulting risks and consequences, as well as the corresponding design considerations and recommended political restrictions of AGR-systems are explained. The final chapter ***"Summary and Findings"*** lists the results of the above chapters and answers the question of the influence of AGR-systems on the production of the construct of binary gender.

2.2 AI, Society & Knowledge Production

The boom in AI applications is greater than ever; tools such as ChatGPT have changed the everyday lives of many people internationally and opened up new options for the masses of society like never before. However, the strong generalisation of AI and the dilution of the term itself, together with the widespread belief in society that we have discovered a universal technology, harbours a number of risks. AI is commonly seen as a solution to both technical and non-technical social or political problems, as it is expected to be objective, effective and accurate. In this regard, the promise of AI is to be better than humans and, above all, to decide and act with less bias. (Klipphahn-Karge, 2023, pp.18-19)

But can this promise be kept? And why does society depict AI as neutral?

In today's society, data is understood as universal truth and concrete knowledge, which is why this understanding of AI is obvious (Klipphahn-Karge, 2023, p.19). Mathematical formulae, numbers, calculations - all of these give ai neutrality in common thinking and provide confidence for the calculation of a social "truth" (Klipphahn-Karge, 2023, p.20). Knowledge is also understood as true and legitimate through its rationalisation, although, as described in the previous chapter "Scientific Bias & Knowledge Production", it cannot be understood as neutral and arising without social influences. But just like knowledge, AI is not a neutral entity that can be regarded independently of society. In fact, the interaction between AI and society is also strong here and should not be ignored when considering the alleged truths created by it.

It is now clearer why the supposed knowledge generated, which is based on parameters of calculation, abstraction and generalisation, prevails. Yet why are these not neutral truths, as is often assumed? In order to answer this question further, it is essential to have a closer look at the interplay between AI and society. Our society operates along and is determined by norms and a life beyond this norm is devalued and considered less worthy. But how are these norms defined? Who decides? One factor that influences this is AI. However, AI is not a person with motivations and actual goals that enforces a norm based on its own interests, but rather learns what it has to do and what is regarded as right and wrong. In the production of knowledge, it learns to align itself with existing hierarchies and exclusions and replicate them. Like a reflection of society's biases, it adapts to socially hegemonic norms and reproduces them. However, by generating knowledge, AI also participates in the standardisation processes of society, which results in a reciprocal interaction that is by no means a production of knowledge separate from or even neutral to society. (Klipphahn-Kar-

ge, 2023, p.23)

Above all, AI as a decision-making authority shows this great societal influence of AI, the interplay between society and AI, as well as an uncritical acceptance of AI's authority in it (Klipphahn-Karge, 2023, p.23). These algorithmic decision-making tools not only evaluate data sets but also use their analyses to make decisions, thereby replacing human agency (Klipphahn-Karge, 2023, p.23).
An example of a frequent application and dissemination is in the area of recruitment and human resources development (Köchling & Wehner, 2020, p.795). Hereby companies such as Google, IBM, SAP and Microsoft already offer algorithmic platforms and systems for these purposes (Köchling & Wehner, 2020, p.796). The reasons for using algorithmic decision-making in this context are mostly economic, as cost and time savings as well as increased productivity are hoped for (Köchling & Wehner, 2020, p.796). In addition, their use is also intended to reduce human bias, as their algorithmic decisions are expected to be more objective, consistent and fair than human decisions (Köchling & Wehner, 2020, p.796). In reality, however, these expectations of the systems' neutrality cannot be met, as their use in recruitment and development processes can lead to discrimination (Köchling & Wehner, 2020, p.797). Despite this, their application is widespread in large companies such as Vodafone, Intel, Unilever and Ikea for recruitment and personnel development (Köchling & Wehner, 2020, p.796).

This example clearly demonstrates how power is delegated to technology (Klipphahn-Karge, 2023, p.23), often with little regard for the social context in which the analysis of AI is created and conducted, creating great potential for a negative impact, especially on marginalised groups.

2.3 AI Subcategories

As before mentioned, the use of the term AI is quite undefined and wide, which is why I regard it as important to define it further. Here, I am concentrating on a division into subcategories in order to put the subcategory "computer vision" of AI, which I will discuss further in the following chapters, into context. The aim is to provide a brief overview to create clarity without discussing the individual sub-areas in detail.

This following rough and first overview of AI and its different parts is based on the breakdown created by the authors Stuti Mehla, Anjali Chaudhary and Raman Kumar and represents only one of many ways of categorising and differentiating AI.
In order to divide and differentiate between the various subcategories of AI, a basic distinction must first be made between two types of learning in the context of AI - ***symbolic learning*** and ***machine learning***. Thereby, machine learning has its main focus on principles of statistical techniques, uses algorithms of these for prediction and imitates human nature for finding an optimum approach to a problem from a range of solutions. In doing so, it is implemented using symbolic thinking, neural networks and evolutionary algorithms. In this context, examples of subcategories of machine learning are natural language processing, speech and image recognition, as well as expert systems. Additionally, a distinction can be made between two types of machine learning: ***supervised*** and ***unsupervised learning***. As the names already indicate, supervised learning is trained to get a defined output by using defined examples, whereas unsupervised learning is programmed without a determined outcome but is developed to predict patterns from a range of data. (Mehla et al., 2019, pp.64-65)
A further subcategory of machine learning is ***statistical learning***, which only focuses on the use of statistic techniques and through this, the implementation of predictions. This type of learning may also be used in image processing and computer vision. Moreover, ***deep learning*** constitutes an important subcategory of machine learning, in which feature extraction and abstraction are performed automatically. Another subcategory that needs to be mentioned is the one go ***artificial neural networks***, or also called ANN, which consist of various entities connected to each other like neurons in the human brain. ANN and deep learning, although being two different categories of machine learning, have many points of overlap, connections and similarities. (Mehla et al., 2019, pp.65-66)

Unlike machine learning, symbolic learning represents information with rules and is based on solving problems of logic and search. Fields like image processing, robotics and computer vision are based on this kind of learning. (Mehla et al., 2019, p.64)
An overview of these categories is shown in Figure 1. on the following page.

Following this explanation of the categories of AI, the question now arises as

to what can be defined and labelled as ***computer vision*** and which systems belong to this subcategory. Computer vision can, in a wider sense, be compared to a human eye perceiving a scene and the brain extracting information from it. Thereby, computer vision extracts information from one or more images of that scene through computer analysis (Rosenfeld, 1988, p.265). This scene could for instance be a scanned document, in which the information to be extracted consists of the text the document may contain (Rosenfeld, 1988, p.266). Areas in which the technique of computer vision is used range from robot guidance (Rosenfeld, 1988, p.266), to image labelling, fail analysis and many more.

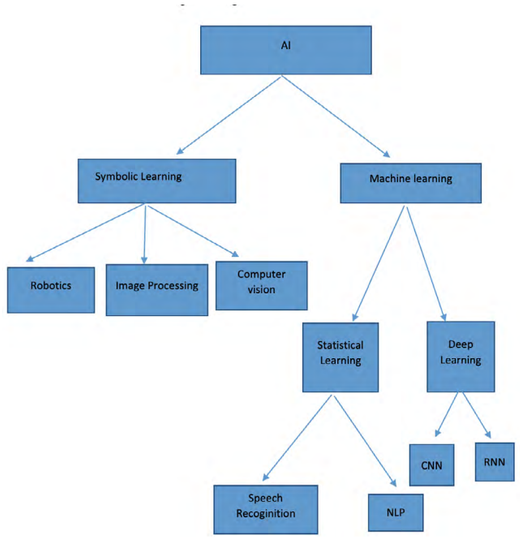


Figure 1.
Hierarchised graphical tree of the super- and subcategories of Artificial Intelligence

In the following, I would like to focus on the technology of ***facial analysis***, also called FA, due to the application of this technology in the artwork to be treated. Using specialised face-trained functions, facial analysis works to recognise people's features and is for instance used for facial detection as well as facial recognition. Here, facial analysis typically classifies and categorises the image relative to other concepts like gender, age, emotions, or others and is also a technology used in AGR-systems, which I will discuss further in the following chapters (Scheuerman et al., 2019, p.1, p.7). Another area of computer vision is ***image labelling***, which offers a range of labels for objects recognised in the image, including people (Scheuerman et al., 2019, p.7).
Furthermore, a subcategory of symbolic learning that has a connection to computer vision is computer image generation. Similar to computer vision but with an inverse of input and output, ***computer image generation*** consists of entering a description of the scene and outputting an image of what the scene may look like under given conditions. (Rosenfeld, 1988, p.267)
Another technology related to computer vision is ***digital image processing***. Like computer vision, it is based on images of scenes, but instead of extracting information from them, digital image processing forms new images on the basis of them. The most important areas of image processing include image encoding or compression, as well as image enhancement and restoration. (Rosenfeld, 1988, p.267)

2.4 Biases in AI

As mentioned in the chapter "AI, Society & Knowledge Production" AI cannot be thought of without normalisation, which constitutes a foundation for discrimination and is therefore closely linked to it. As elaborated before, normative stereotypes are often perpetuated through AI and lead to systemic disadvantage, mostly for already disadvantaged population groups. Given that bias in AI is an extensive topic, I will first outline some of the overall consequences of AI discrimination and its power, then focus solely on how gender biases emerge and what solutions exist to eliminate such biases.

2.4.1 Power & Consequences

But what does discrimination mean in the context of AI? It means unjustified unequal treatment or unjustified equal treatment. As discrimination is about parallels of judgements, these can also be carried out through AI, just as they are otherwise performed through interpersonal behaviour. One example of this is Amazon's recruitment algorithm, which identifies tech-savvy men as significantly more suitable for Amazon's job positions than equally tech-savvy women. In this case, discriminatory behaviour, which would traditionally be conducted by a human, is implemented through AI. (Klipphahn-Karge & Koster, 2023, pp. 20-21)

AI is political and does not operate independently of social influences (Kühnen, 2023, p.40), but is much more strongly impacted by them. As explained in the

previous chapter, AI is a starting point for shifting boundaries and destabilisation (Kühnen, 2023, p.40). It creates perceptions of truth, norms and knowledge (Klipphahn-Karge & Koster, 2023, p.20), which is why discrimination in the context of AI has a very profound effects and may have severe consequences. Therefore it is important and even necessary to ask how knowledge is produced by algorithmic systems (Klipphahn-Karge & Koster, 2023, p.21). This is because we are dealing with a socio-technical structure whose historical, economic and biopolitical interconnectedness should not be ignored (Kühnen, 2023, p.41). One example of this are discriminatory predictions of AI-systems, which sometimes serve as evidence of past discrimination, enabling the identification of present inequalities (Kühnen, 2023, p.52).

And what are the concrete risks that arise from discrimination by AI? As we decide to give AI a lot of power and are increasingly dependant on it in some areas, biases have extensive effects on our society. Examples of this impact are automatic translation technologies using AI, which express deep-seated misogyny through their choice of words in translation. They do this by transforming words that would be neutral or feminine into generic masculine. Thus, the English and gender-neutral "the teacher" suddenly becomes "el profesor", which describes a male teacher in Spanish. But also in other areas, like an AI driven internet search engine are influenced by biases like, for example, racial stereotypes. For instance, a new search engine temporarily tagged "unprofessional hairstyle" exclusively with images of black women. Another example is Microsoft's Tay AI, also known as the user @TayandYou, which published racist, misogyne, and even Nazi-like slogans on social media without its creators knowing or understanding why this happened. But also, commonly utilised facial recognition technologies are introducing biases by demonstrating lower accuracy rates for identifying black and Asian people. (Ruiz & Sedeño, 2023, p.61-63)
Discriminatory algorithms are also used in medicine and healthcare, often with life-threatening consequences. One example of a case of AI bias in healthcare is an algorithmic system used in the US healthcare system that structurally favours white patients over black patients. This algorithm was intended to identify patients at risk for a place in a care programme but led to white people getting a higher probability of a place without a logical justification. (Kühnen, 2023, p.39)
As we see biases in AI-driven applications are diverse and also have an impact on very intimate areas of our lives, which is why we should not underestimate their influence on our social behaviour and opinions (Ruiz & Sedeño, 2023, p.62). Especially the introduction of biases in automatic desicision making, like in the first example of Amazon's recruitment algorithm, but also into machine learning can produce a great risk for discriminated groups (Ruiz & Sedeño, 2023, p.63). As mentioned above, the intention and belief that by not involving a cognitive actor in the decision-making process, the outcome will be more accurate, neutral and fair is usually not the case, as AI is so often biased too (Ruiz & Sedeño, 2023, p.65).

2.4.2 Genesis of Gender Biases in AI

To further understand how gender biases are implemented in AI, it is necessary to clarify and divide the fundamental processes that make up AI. Starting from the fact that algorithms are considered chains of transmission and processing of information, they can be divided into four main moments in which the implementation of biases may take place. The first moment is the data input, the second is the algorithmic operation, the third is the output and reception of the results by the users of the algorithm and the fourth is the supervision and extraction of data with which the system is fed back. Sorting the occurring biases depending on the moment in which they arise, it seems to be becoming visible that bias in the training data and algorithmic approach bias are occurring in the moment of data input, where algorithmic processing bias, transfer context bias, biases in interpreting the results, non-transparency bias, automation bias and consumer bias all appear in the moment of algorithmic operations and in the output and reception of results. Furthermore, according to this categorization, the occurrence of feedback loop bias can be attributed to the moment of monitoring and data collection of the data, which is fed back into the system. (Ruiz & Sedeño, 2023, p.69)

But what are all these biases, what do they look like and how do they arise in these specific moments?

Starting in logical order, the ***data entry*** is the first moment in which biases may be implemented. In this first step, the decision is made on what data to use, which will influence the entire functionality. It should be noted that low-quality data used for training or as any other part of the algorithm will inevitably lead

to low-quality results and distortions. Therefore, the quality of this data is very important. In the context of gender biases occurring through data input there are as mentioned before, two main biases: ***training data biases*** and ***algorithmic approach biases***. One of the most common sources of error for algorithmic distortions is the utilisation of inaccurate samples in the training data, also called training data biases. They can be implemented through serious mistakes but also through strategic decisions by companies and are difficult to recognise as companies or platforms very rarely and reluctantly make them public. Algorithmic approach biases arise from biased decisions about which data set to use and how to train the algorithm. This type of bias can lead to errors or malfunctions by including variables such as gender etc. as well as excluding them when the opposite would have been important for a neutral approach. (Ruiz & Sedeño, 2023, p.70)

The second moment in which gender biases may arise, the ***algorithmic operation***, is the processing of the data input into the algorithm. Distortion can arise as a result of the fact that the algorithm itself contains a procedure that does not reflect a neutral approach. However, it is important to note that there may be good reasons for implementing bias in an algorithm. For example, in special cases, this bias can be used to compensate for training data as a source of bias, for instance in the case of a small population sample, which results in noise in the sample as a consequence of overrepresentation. Furthermore, there may be ***processing biases*** if there is no differentiation between the various cases as well as the context in which they generate a result. (Ruiz & Sedeño, 2023, p.70-71)

In the third moment, the ***output and reception*** of the results, in which gender biases may arise, might appear to be influenced by ***interpretation bias***. This is a problem in data output that may happen if a user is not experienced in reading and interpreting data from an algorithmic system. This creates the risk that the interpretation of the results will be distorted by the user's internalised prejudices. A further issue relating to the output of data is the lack of transparency in the functioning of many autonomous systems. Many researchers and developers see them as a black box and are unable to understand how they arrive at their results, which makes it very difficult to critically question them. Furthermore, ***automation bias*** may occur in this moment of algorithmic processing, which is based on the user's overestimation of the possibilities, capabilities and benefits of AI. As described in the chapter "AI, Society & Knowledge Production", this is a widespread attitude in society that should not be underestimated when utilising AI. For this reason, users tend to interpret the results of an algorithm as a neutral statistical calculation with perfect accuracy instead of as a prediction with a certain level of confidence.

A third bias arising in the momentum of output and reception is the ***consumer bias***. This bias, similar to the interpretation bias, happens due to users internalised bias. It describes the transfer of their prejudices as interacting users to an online environment where these are reinforced by algorithms. This in turn can reproduce internalised stereotypes in the system, thereby increasing discrimination. (Ruiz & Sedeño, 2023, p.71-72)

The last of these four moments is ***monitoring and data collection***, which will feed back into the algorithm. This process enables algorithmic systems to use the data they generate via a user interaction to generate further data and adapt their behaviour accordingly, i.e. to "learn". Although this is a very important moment for increasing the efficiency of algorithmic system development, it may also be the moment in which gender bias emerges in the algorithm. One example of how these ***biases in algorithmic feedback loops*** arise is the functionality of Google's search engine. In this, the words chosen by the users and the decisions they make with the resulting outcomes are stored. These are then in turn established in the database of the algorithmic system, creating a circulation system of data. As said before, this may lead to better results but could also amplify and reproduce prejudices, which are replicated during the search. This form of bias is very difficult to spot due to the underlying functionality of this momentum and is all the more difficult to neutralise. However, this can be achieved by implementing intentional biases, whereby new, unpredictable biases can arise. (Ruiz & Sedeño, 2023, p.72)

As we see biases may also be due to incorrect attribution of meaning by users (Klipphahn-Karge & Koster, 2023, p.22) and are frequently a consequence of interaction with humans (Ruiz & Sedeño, 2023, p.73). It is important to note in this context that we often cannot recognise these interactions at a glance but that they are often fairly hidden, whether in the selection of the dataset used, the data itself, or through actual interaction with users.

2.4.3 Solution Approaches

It is recognisable that these biases can be very diverse and extensive in their nature and appearance and may also have serious consequences for already

disadvantaged groups in our society. For this reason, and in the context of the artwork "Unlearning Gender", this chapter will briefly discuss solutions and approaches for preventing the implementation of gender biases in AI. Thereby, these diverse solution approaches can be categorised by the group they are targeted at, which is the dataset, the algorithm and the human users (Wellner & Rothman, 2019, p.9). Following the next section will elaborate on solutions based on these categories of target groups.

Starting with the solutions referring to the ***datasets*** used in algorithmic systems is the avoidance of the category of gender in a dataset, which is beneficial if users are facing discrimination based on their gender. A practical example of this type of solution is the approach taken by music services such as Shazam, which do not use users demographic data to identify their musical tastes. Instead, their algorithms analyse the users actions to achieve personal determination. (Wellner & Rothman, 2019, p.9)
But even though it may seem reasonable at first glance, the prohibition of categories does not provide a solution in a lot of cases, as this may lead to invisibilizing discrimination (Ruiz & Sedeño, 2023, p.71). Like in the context of the previous action-concept of Exit Gender, pointing out genderism is a fundamental part of fighting against gender biases and the banning of the category of gender may reinforce power structures even if the contrary was intended. Additionally, an exclusion of category cannot prevent the algorithms from finding alternative parameters to internalise this structure of discrimination anyway (Wellner & Rothman, 2019, p.10).
Another solution approach is to correct or expand the training data used to develop algorithms (Kühnen, 2023, p.40) and to create a more holistic and critical approach on how to build a dataset, which I will discuss further in connection with AGR-systems.

A solution regarding the target group of the ***algorithm*** is the transparency of its functionality. This includes that AI systems make visible which factors or variables have influenced the systems decision and how, with what intensity and in what direction of decision-making this was achieved. Furthermore, transparency would involve the disclosure of how the data was captured and labelled. In principle, it would be helpful for recognising and eliminating gender bias if developers shared their leading logic, for example by disclosing their decision-making process. (Wellner & Rothman, 2019, p.10)

Another approach to the prevention of gender bias in algorithms is anti-bias algorithms. These algorithms are developed to avoid further processing of the inbuilt biases of a data set. During these processes, developers determine which bias they intend to avoid, which the algorithm can then identify as an attribute that should be excluded when creating dependencies. The inclusion of diverse groups by developing algorithms like this can make a further positive contribution to this form of discrimination prevention. Another proposed solution in the area of anti-bias algorithms is the creation of a monitoring algorithm that detects biases and adjusts the data set used accordingly. However, one leading question in this theoretical approach is how to train a system to detect biases and whether this is possible to achieve, like in other training systems. Whether discrimination is implemented or not can also be regarded as philosophical, since it raises the question of how we define fairness. Therefore, the issue of whether an algorithm is biassed or not cannot be resolved with a yes or no in all cases. (Wellner & Rothman, 2019, p.11-12)
One approach regarding a solution approach in algorithms, already mentioned in the previous chapter, is the neutralisation of bias through technical adjustments, called "fixes", like, for instance, introducing an intentional bias (Kühnen, 2023, p.39). In general, however, it is unfortunately almost impossible in most cases to comprehend how the algorithmic systems work and thus to improve them as they are protected by copyright (Kühnen, 2023, p.49). Critical external intervention to identify the causes of bias is therefore only possible in rare individual cases (Kühnen, 2023, p.49). Therefore, as previously described, transparency is a key point in the context of preventing gender bias.

Solution approaches referring to the target of ***human users*** could be the education of users to develop an understanding of their internalised biases and teaching them the ability to identify and act upon them. Therefore, users could learn a set of skills that would equip them to act responsibly in their interactions with AI. Another approach could be the possibility for users to perceive alternative outputs to further understand the context of the results. Unfortunately, the lack of transparency of the algorithms is again a problem, as users are usually not provided with alternative results and even the developers do not fully understand the AIs they have created. As already mentioned, some AI techniques are still under-researched to identify a clear procedure or the reasons for decisions. (Wellner & Rothman, 2019, p.12-13)

Indeed, it is emphasised that gender-specific prejudices cannot be eliminated by technical solutions alone but require the cooperation of experts with different viewpoints from various fields of knowledge in order to open up a discussion with diverse ethical, epistemological and political perspectives (Ruiz & Sedeño, 2023, p.73). However, this diversity is very rare in today's tech industry. At tech giants Facebook, Apple, Microsoft and Google, for example, women hold only between 25% and 23% of all tech jobs (Richter, 2021). Developments in the composition of OpenAI's board show a similar trend. Here, the only two women on the board have been replaced by two men, making the board all white men (Carter, 2023). This example highlights the need for social structures to change in order for diversity and representation in teams to become a reality.
Additionally, the involvement of users in the development as well as in the process of finding a solution for gender bias arising through AI systems could be an important step in dissolving them systematically (Wellner & Rothman, 2019, p.13). This could, for instance, be realised by educating users and leading them to gain AI competence, as well as by creating the opportunity for users to report biases (Wellner & Rothman, 2019, p.13). Nevertheless, developers and companies should, of course, in no way be absolved of responsibility, as they have a decisive influence on the development of AI systems and the prevention of gender discrimination through their systems.

Despite these challenges, it should be a priority in the field of technological developments to ensure that inequality is not reproduced by AI, as it will fundamentally contribute to shaping our future world. Furthermore, as previously mentioned, analysing biases in AI opens up the recognition of discriminatory structures in our society, as these have no other origin than prejudices that already exist in our society. This challenge also opens up the possibility of eliminating these dynamics through analysis and targeted intervention to create a better future, especially for discriminated groups. (Ruiz & Sedeño, 2023, p.63)

2.5 AGR-Systems

After analysing several variations of gender biases arising in ai-systems as well as solution approaches for them, this chapter focuses on automatic gender recognition (AGR) systems, which are a subcategory of computer vision and therefore also a part of AI-systems. As the artwork "Unlearning Gender" is a critical examination of this specific AI-system, it also requires a theoretical analysis of this type of system. In doing so, this chapter will outline the AGR-system itself as well as the different types of baises it contains, analyse the areas of application and the associated dangers, as well as provide an outlook on possible ways of managing these systems.

AGR aims to determine peoples gender through algorithmic identification on the basis of photos or videos (Keyes, 2018, p.1).These typically distinguish between men and women or female and male, and therefore have a binary understanding of gender (Scheuerman et al., 2019, p.19). AGR-systems are part of the subfield of computer vision and use automated facial analysis technology, which is a technique that uses machine learning techniques to perform automated analyses in the context of human face reading (Scheuerman et al., 2019, p.2). These contain a series of computer vision tasks for processing and analysing digital images or videos that show human faces (Scheuerman et al., 2019, p.6). Included in this is facial detection, which detects faces, and facial recognition, which recognises the face of a specific person (Scheuerman et al., 2019, p.2). Both of these systems use methods for face classification and computational processes resulting in probabilities associated with various features or characteristics of human faces to categorise or identify them (Scheuerman et al., 2019, p.6). Thereby this technique is not only used for the attempt of recognising gender but also for the trial of predicting age, ethnicity and emotions (Scheuerman et al., 2019, p.6). These attempts to recognise the above categories function by using training data consisting of digital images that are qualitatively labelled by people for the corresponding categories (Scheuerman et al., 2019, p.6).
The process of using an AGR-system consists of the following steps: First, a person is isolated within the photo with the help of geometric structure, skin texture or 3D modelling, after which the resulting image is analysed by the algorithm for alleged gender recognition. The analysis focuses mainly on the persons face but also includes the persons body shape, gait and some other markers, which can vary greatly depending on the system. (Keyes, 2018, p.4)

2.5.1 Biases in Conception & Functionality

In order to analyse and explain the conceptual and functional biases of AGR-systems, I will first discuss the counterparts of the systems and the informa-

tion provided in the associated papers of the developers, and then critically examine them.

To analyse the biases in conception of AGR-systems, answering the question of what the systems understanding of gender is, offers a first approach. According to an analysis of 58 AGR-papers, 94.8% of these systems treated gender as binary (Keyes, 2018, p.7). This means they mostly only distinguish between "male" and "female". Additionally most AGR-systems, 72.4% to be exact, treat gender as an unchangeable characteristic (Keyes, 2018, p.8). However, it is important to note that this percentage is only lower than the previous percentage due to the fact that many of the analysed papers did not refer to this topic at all (Keyes, 2018, p.8). A further interesting finding of that analysis was the fact that there was no clear definition of gender, but that it was only indirectly discernible (Keyes, 2018, p.9). Another discovery of the analysis was that the understanding of gender seemed to be as physiologically-discernible (Keyes, 2018, p.1), which is why the systems construction of gender is based on physiological components. In other words, the concept of the system leads to peoples bodies being used as the determining factor for the ascription of gender through the system (Keyes, 2018, p.8). Moreover, no reference was made to any limitation of the "recognition" of gender (Keyes, 2018, p.9).
Additionally, another analysis has shown that these systems also use the visible presentation of a person in the sense of their preformative expression of gender through such things as grooming and style to categorise them (Scheuerman et al., 2019, p.20). The study also found that facial features such as eye, cheek and lip make-up were one of the most influential variables in the attempted prediction of gender (Scheuerman et al., 2019, p.6). This appraisal also found that gender classification results were inconsistent across platforms (Scheuerman et al., 2019, p.9).

After analysing the social construct of gender in the previous section, it should be clear that this conservative, unquestioned assumption of binary gender as an all-encompassing norm should be regarded very critically. Classifying gender without considering gender as a spectrum and the role of gender-identity speaks in favour of an understanding of gender that is strongly oriented towards and adapted to conservative social norms. The absence of a clear definition of gender or negotiation of the use of this gender model in the AGR-System papers, in combination with the fact that no limitation of this model of gender is mentioned, speaks for an unreflective reproduction of these norms by the developers.
Furthermore, the concept of the physiological recognisability of gender, as also described in the previous section, is a very outdated approach that cannot be scientifically justified, especially its connection with the binary gender system (Scheuerman et al., 2019, p.6). Moreover, the commonly used terms "male" and "female" for the categories of AGR-systems are biologically essentialist and do not refer to gender identities like the words "man" and "woman" would do (Scheuerman et al., 2019, p.8). In addition, it must be criticised that the system addresses the performativity of gender, but equates its expression with identity. However, how a person expresses gender in a pervormative way should not be read as their identity, as this can differ greatly from their gender and does not always have to be an indicator of the persons gender (Scheuerman et al., 2019, p.21). In addition, this approach assumes a certain cultural understanding of gender that prioritises self-presentation and gender behaviour (Scheuerman et al., 2019, p.20). AGR-systems often place heavy emphasis on specific facial features when calculating gender recognition which could imply a link between gender in relation to lip and eye make-up (Scheuerman et al., 2019, p.6). This implication would follow gender sterotypes (Scheuerman et al., 2019, p.6). and therefore has to be regarded very critically.

To summarise, clear concerns can be expressed about how gender is conceptualised in these systems, namely in binary, unchangeable terms and as physiologically fixed and recognisable, instead of understanding gender as socially constructed and as a biological spectrum. The equating of gender and gender performance, as well as the reference to the categorization of gender systems according to gender stereotypes, should also be viewed critically. Summed up the concept of AGR-systems are based on the fallacy of being able to recognise gender from the outside and are therefore very limited (Scheuerman et al., 2019, p.21). Due to these points, it is not possible to speak of a recognition of gender as stated by developers, but only of an attribution of gender, whereby this also only takes place within the binary gender logic.

2.5.2 Biases in Data

Following the discriminatory concept of AGR-systems, cis-normative images were used for the training sets as they were considered most appropriate by

the developers (Scheuerman et al., 2019, p.15). Through this pre-selection of images, a technical form of gender binary was actively created, reproducing social norms regarding gender (Scheuerman et al., 2019, p.15).
Unfortunately, the biases in data are not limited to gender biases, but also include racial biases. For example, when evaluating computer vision services from Microsoft, IBM and Face++, which were used for the attempt to recognise gender, a higher error rate was found for dark-skinned women than for white men (Scheuerman et al., 2019, p.2).

2.5.3 Use Cases and Danger

The AGR-system is currently utilised in the field of human-computer interaction and is to be used in the future in contexts like physical access control, data analyses and advertising (Keyes, 2018, p.1). Companies like Amazon, IBM and Microsoft already offer AGR-services according to the binary understanding of gender (Scheuerman et al., 2019, p.8). Regarding the aforementioned use cases the potential consequences can be misgendering, gendered violence that emerges as a result of an implementation in gendered spaces, the reinforcement of erasure and misuse of facial analysis, which will be elaborated in the following.

Misgendering refers to when someone is addressed with gendered terms that do not align with their gender identity (Keyes, 2018, p.11). This may happen in social situations of day to day life by being addressed with wrong pronouns or by words like "girl", "women", "miss", or "boy", "man", "mister" etc. depending on whether you identify with any gender and if yes, with which one. In the context of AGR-systems misgendering takes place when the systems assigned gender category does not fit the categorised person's gender-identity and self-perception. As these services are only able to ascribe the categories "male" and "female" they lack the ability to label non-binary and agender people correctly. In addition, training the systems with cis-normative images could increase the risk of misgendering of trans people.
In consequence, gender-queer people have a very high risk of being misgendered by AGR-systems, which often causes emotional harm, sometimes resulting in gender dysphoria. Misgendering is a problem gender-queer people already face through their social environment; this is then reinforced through these systems and represents a further burden queer people have to experience.

The automatic misgendering (Keyes, 2018, p.12) may be even more detrimental than the misgendering by people due to the promise of neutrality of AI. Moreover, this misgendering creates pressure for gender-queer users to conform to the norm of cis-normative gender performance. (Scheuerman et al., 2019, p.22) Furthermore, misgendering, especially when it comes from a technology labelled as neutral, only strengthens the impression that gender-queer people's identities are not acknowledged as real (Keyes, 2018, p.11). This may result in a negative impact on self-esteem and the perception of social stigmatisation (Keyes, 2018, p.11). In addition, the limited knowledge and understanding of how gender classifications are made may also cause insecurities in the misgendered individuals and may trigger further self-doubt (Keyes, 2018, p.22).

In the context of AGR-systems, an incorrect gender assignment could of course also be seen as an inaccuracy or part of a margin of error, especially because gender-queer people are often considered a minority in society. But the context in which AGR-technology is fundamentally based on the idea of gender being something that is assigned, argues in favour of discrimination. In fact, it is much more the case that existing discrimination in society in the form of misgendering is carried into new areas and reproduced by technology. (Keyes, 2018, p.13)

As already mentioned, there is the idea of using AGR-systems in the context of gendered access control for facilities such as toilets or changing rooms (Keyes, 2018, p.4). As AGR-systems are very likely to categorise gender-queer people incorrectly, their implementation in gendered spaces could cause even more discrimination and social ejection (Keyes, 2018, p.11). In addition, AGR-systems also have a high error rate when classifying female people with dark skin colour (Keyes, 2018, p.11).
To illustrate the consequences of an implementation of AGR-systems, let’s look at the example of the use of AGR-systems in common binary gendered toilets. Suppose a trans masculine person wants to use the toilets for men, but is classified as female by the implemented AGR-system at the entrance. As suggested in publications, an "operator", i.e. a kind of security service, would now be alerted and go to the toilets. Once there, the trans masculine person could be forced by security to use the toilet that corresponds to the gender they were assigned at birth. If the queer person did not submit, the police could now be called by the operator, which could lead to further violent disciplinary action. (Keyes, 2018, p.11)

The queer person mentioned in this example will certainly describe this experience as very negative and feel socially marginalised and discriminated against. It is important to point out once again that the binary gender model is a fairly recent European construct and not a truth or reality. Keeping this in mind, the technological and violent enforcement of this by the state cannot be justified.
A further area of application for AGR-systems is gender-specific advertising (Keyes, 2018, p.4). It is mainly used for gendered shopping recommendations and other target group advertising (Keyes, 2018, p.4). Even though this use case might seem less harmful in comparison to an implementation of this technology in gendered spaces, we should question if this implementation is really necessary. Especially as this categorization and the proposals based on it are most likely to follow gender stereotypes. ***How else can the categorization, which is also only presumed and excludes gender-queer people, really represent added value for target group-oriented advertising?***

If we think of an example in which this kind of gender assumption would be used, we could think of targeted advertising for make up. In this case, make up would be presented to "female" categorised users. Instead of using this gender categorization a detection of make up could be more precise and helpful for targeting advertising, as not every female identifying person is interested in make up, but other genders against all gender stereotypes also like to wear it. (Scheuerman et al., 2019, p.23)
Another great consequence of implementing AGR-systems is the potential erasure of gender-queer people (Keyes, 2018, p.12). The fact that there is no category for gender-queer people means that they are not included in the implementation. Whether in the example of the use of AGR-systems in advertising or in the admission control of toilets, gender-queer people fall through the system and are not taken into account. Therefore, AGR-systems may reinforce societal erasure and reproduce discrimination (Keyes, 2018, p.11).
As computer vision, including AGR-systems, is offered as a cloud-based infrastructure service accessible to everyone, the possibilities for implementation and use are very broad. (Scheuerman et al., 2019, p.2). By providing this technology as a service, there is a risk of it being misused, which could have serious consequences (Scheuerman et al., 2019, p.2). However, facial analysis does not only have a theoretical potential for misuse but is already used for discriminatory purposes, often without the knowledge of the infrastructure providers (Scheuerman et al., 2019, p.22). One example of this is the use of Microsoft Azure's by the Chinese company SenseNets, to track Muslims, who are a minority in Xinjiang (Scheuerman et al., 2019, p.22). Cases like this show that the potential abuse of such services, for example, implementing them in airports or immigration systems, is not as far away from reality as we would like them to be (Scheuerman et al., 2019, p.2). Coming back to AGR-systems its technology could potentially be abused for tracking gender-queer people, which would have deadly consequences if utilised in countries in which queer people are persecuted and disenfranchised. One main question in incidents like this is who can be made responsible (Scheuerman et al., 2019, p.2) and how this misuse can be prevented.

As before mentioned, AI-systems increasingly influence our daily lives, which is why their functions and approaches should always be questioned. But especially the alleged detection of categories of human identity like age, race, and gender by AI-systems, which are often social categories over which discrimination takes place, should be questioned as necessary (Scheuerman et al., 2019, p.2). In particular, the implementation of AGR-systems might decrease the safety, liberty and emotional integrity of the gender-queer population and therefore represent a potential danger for this already marginalised group (Scheuerman et al., 2019, p.6).

2.5.4 Design Considerations

As explained in the previous chapter, there are many risks associated with the use of AGR-systems, which is why many considerations should be made in their design and application, and a political restriction of their free use nowadays is considered desirable. Thereby design and policy being the key points of intervention (Scheuerman et al., 2019, p.23), I will elaborate on what considerations regarding design could look like in this chapter and will follow on with possible political restrictions in the next section.

Starting with design considerations in the context of AGR-systems, a guiding consideration is to ***use gender carefully in classifications***. This includes considering why the classification of gender is used and evaluating what advantages it offers. Therefore, the purpose of gender classification is questioned and it is explored if the use could be unnecessarily marginalising. In addition, consideration of how gender will be defined through the classification is crucial, and

the binary understanding of gender should not be an undisputed standard. Due to the aforementioned dangers of implementation, it should also be taken into account what potentially harmful effects the offered technology could be misused for. (Scheuerman et al., 2019, p.23)

A further design consideration is to ***inform users that they are going to be gendered*** by the system and give them the possibility to decline. Furthermore, transparency in how they will be gendered should be taken as standard. This could be implemented by giving users the rights to access and edit their data used in the gendered categorization. In addition, users must be informed about how and where their gendered information is saved and used. One example in which this design consideration is not taken into account is the targeted advertisement on Facebook. By registering for an account, Facebook stores their users binary gender information and doesn't update it, even though users are able to change their gender identity in their Facebook profile. Following their targeted advertisement is not according to their stated gender identity but to their binary information given during registration. (Hamidi et al., 2018, p.10)

Moreover, taking gender diversity into account when designing systems is an important design consideration. One question that designers and developers should ask themselves in this context is whether the database is representative of the user population. Here, the ***inclusion of different perspectives*** of people with different gender identities in the design process and the collaboration of a team that is as diverse as possible is an important point. (Hamidi et al., 2018, p.10)

In this context, it should be noted that using a binary system restricts gender fluidity and a self-determined gender identity, which is why ***feature-based labelling*** should be considered as a design option. Building on the previous example of makeup, categories relating to gender performative interpreted characteristics could be used as an alternative to gender classification (Scheuerman et al., 2019, p.23). So instead of talking about "male" and "female" gender-specific labels could be used for gender-specific words for professions, for items of clothing interpreted as gender-specific or for body language interpreted as gender-specific. In practice, labels could be "beard", "long hair", "makeup" and many more, which should have the possibility of overlapping with other labels (Scheuerman et al., 2019, p.25). Although these would still correspond to frequently gender-stereotypical thinking, they could still capture more detail in comparison with the essentialist categories of "male" and "female" and could by including the overlap of labels, reflect an ambiguity that nevertheless breaks with gender binary thinking. In this context, inclusion of a broad variety of performative gender labels is recommended, which is why data sets that allow for the existence of multiple performative values should be used (Scheuerman et al., 2019, p.24).

If there is nevertheless no possibility of working without the categorization of gender, a further consideration could be to ***question in what context it takes place*** and is used for. It may, for instance, be justified to include gender as a category in order to weaken gender-specific prejudices. This should include an analysis and consideration of which types of bias are prioritised and which are made invisible. The consequences of the leakage or misuse of gender-specific data should also be taken into account in design decisions. Here, too, the misuse of systems should not be overlooked, because even well-intentioned systems can be misused. (Scheuerman et al., 2019, pp.23-24)

With regard to the creation of data sets, it should be noted that there is no way to create a fully universally inclusive data set. Although there are various approaches to making datasets as inclusive as possible, they all have limits and these must not be ignored in their use. One approach for creating a more inclusive dataset is to ***use data in which users self-identify*** their gender. (Scheuerman et al., 2019, p.24)

Furthermore, relying on this self-identified gender information in other areas of development is seen as a productive approach and could be realised by an explicit request to users to describe their gender themselves (Keyes, 2018, p.15). Thereby, individuals could be given more autonomy in defining their own personalities (Keyes, 2018, p.15). This could also include providing the possibility for users to change and update their gender details over time in order to consider gender transition and fluidity (Hamidi et al., 2018, p.10). Thereby, the probability of being misgendered could be reduced and would also enable digital platforms to reach target groups more precisely (Hamidi et al., 2018, p.10). Services could therefore be improved and could, for example, also advertise suitably for transgender people (Hamidi et al., 2018, p.10).

Another point in terms of creating inclusive data sets is to ***consider the context and objective of the system*** based on the data set in order to design them accordingly. With regard to gender, it should therefore be examined what the classification is used for and which individuals should be categorised as women or men in the sense of the systems concept. One example of this is the use of a system to create equal opportunities for women to be hired for a job.

In this case, for example, the inclusion of trans women in the category of woman could be an important step. However, the dangers of misuse of specific categories in discriminated groups are also a concern. For example, if we stay with the previous example, explicit trans labels could potentially out people unintentionally, or the systems could be used to further exclude trans persons from the labour market. (Scheuerman et al., 2019, p.24)

However, in order to exclude discrimination on the basis of racialisation, racial diversity should be included in addition to gender diversity (Keyes, 2018, p.16), as well as other forms of marginalisation. Here, gender is only one of many categories through which individuals are discriminated and also the interplay of these should not be underestimated and taken into account when designing systems.

2.5.5 Recommended & planned political Restrictions

Due to these rather complex and extensive backgrounds to be considered in the design of AGR-systems and their long list of possible consequences and misuses, recommended political restrictions of AGR-systems now follow, together with a summary of eu-wide planned policy interventions.

One such policy constraint would be the development of ***comprehensive standards*** for the use of gender in the context of computer vision systems. This could include the establishment of guidelines and concrete strategies for their enforcement and implementation. Thereby, gender equality could be further promoted and cases of biases and related consequences of the free access and use of these systems would be minimised (Scheuerman et al., 2019, p.25).
The lack of accountability in the use of facial analysis systems mentioned in the previous section could be addressed by introducing policies that ***hold organisations accountable*** for the use of services. In this context, policies should be developed that create accountability and transparency for the use of services by third-party applications. Doing so is an important step in minimising the risk of misuse of image processing services (Scheuerman et al., 2019, p.25).
A further policy restriction may be that gender is treated as a sensitive and exclusively private category. This could be implemented by creating ***policies regarding the use and collection of biometric data and facial and body images***. In addition, these should be guidelines that prevent discriminatory and non-consensual gender portrayals. To give an example, a more concrete implementation could be a ban on the use of gender in advertising and marketing placed with the help of fa-systems (Scheuerman et al., 2019, p.25).
In this context, I would also like to mention the ***political guidelines*** already provided for in the ***AI Act by the European Parliament***. This is a proposal for an EU legal framework for artificial intelligence from April 2021, which was voted on in June 2023 (Madiega, 2023, p.1). It focuses on the specific use of AI-systems as well as their associated risks (Madiega, 2023, p.1) and includes a categorization of AI-systems according to a risk-based approach (Madiega, 2023, p.4). Here, different political restrictions are planned depending on the level of risk posed by the system (Madiega, 2023, p.4). Thus, systems that are categorised as an "incalculable risk" would be banned, "high-risk" AI systems would be authorised and AI systems that only represent a "limited risk" would be governed by very low transparency obligations (Madiega, 2023, p.1). This system envisioned by the European Parliament is also illustrated in the following figure (Figure 2.).

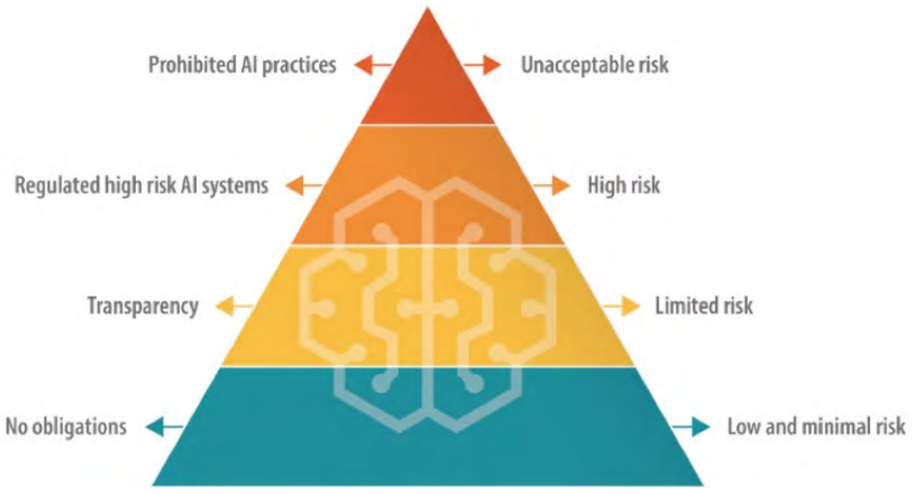


Figure 2.
Pyramid of level of risk of AI-systems and their associated political restrictions Hierarchised graphical tree of the super- and subcategories of Artificial Intelligence

In this context, biometric identification and categorization of persons, as well as real-time and remote biometric identification systems, such as facial recognition, are classified in the category of "unacceptable risk". The European Parliament therefore considers these AI systems to be a threat to people and wants to introduce a ban on them. However, exceptions are provided for in the context of law enforcement purposes. (European Parliament, 2023)

Since AGR-systems are among the systems that perform biometric identification and categorization of persons, they are to be banned under these conditions throughout Europe in future under the AI Act.

2.6 Summary & Findings

In summary, it confirms that the social assumption that AI is neutral is clearly refuted. Instead AI can be regarded as political and does not operate independently of social influences, but rather acts as a reflection of the prejudices of society by adapting to socially hegemonic norms and reproducing them. This, in turn, has serious consequences and becomes particularly visible through discrimination by AI, which is only reinforced under the guise of neutrality. In the context of AI, discrimination means unjustified unequal treatment or unjustified equal treatment and already has many negative consequences through the use of AI in almost every area of society.

Focussing on gender biases, these appear to arise primarily due to misattributions of meaning by users and are moreover frequently a consequence of interaction with humans. However, developers and their approach to implementation are also a relevant factor in how gender biases arise. In principle, it can be recognised that gender biases tend to be quite hidden, be it in the selection of the data set utilised, the data itself or through the user interaction.

Solutions to prevent the emergence of these gender biases are complex, as they cannot be achieved through technical solutions alone. Rather, it requires the collaboration of experts with different points of view from various areas of expertise to enable diverse perspectives. In addition, the involvement of users in the system development is a promising step towards avoiding gender bias, as is the learning of AI competences by users.

The analysis of AGR-systems has shown that the vast majority of them have binary and biologically essentialist understanding of gender and thus work without considering gender as a spectrum and the role of gender identity in their classification. In this respect, their understanding of gender is based on physiological components, as well as the equation of performativity of gender with gender identity, whereby their "recognition" also appears to follow gender stereotypes. In addition, cis-normative images were used to create training sets, actively creating a technical realisation of gender binarity that reproduces social norms regarding gender. Consequently, it can be said that the development and design decisions contained in this implementation reveal an unreflected reproduction of binary gender norms by the developers. Therefore, the conception and realisation of AGR-systems alone is a clear reproduction of binary gender, which contributes to the maintenance of binary gender as a social construct.

When examining use cases and threats, it became clear that the use of AGR-systems compromises the security, liberty and emotional well-being of gender-queer individuals and therefore poses a potential threat to this already socially marginalised group. How these systems are used and what consequences they have is also strongly influenced by the assumed neutrality of ai systems. In addition, their use also reproduces binary, normative gender concepts and technically implements them in social life.

To counteract this, considerations for the design of AGR-systems include the careful use of gender in classifications, informing users that they are being gendered, the inclusion of different perspectives of individuals with different gender identities in the design process as well as alternative implementation through feature-based labelling. In addition, the question of the context in which AGR-systems are implemented and the aim of the system should be asked in order to design data sets accordingly. A further recommended measure is the use of data in which users identify themselves in order to enable autonomy over their identity.

In this context of the design and use of AGR-systems, suggested restrictions were collected, which include the establishment of comprehensive standards for the use of gender in the context of computer vision systems, accountability of organisations for the use of their provided services of AGR-systems and the creation of policies for the use and collection of biometric data and facial and body images.

In this context, it was also noted that the AI Act of the European Parliament classifies biometric identification and categorization of persons as well as real-time and remote biometric identification systems, as belonging to the "unacceptable risk" category, which therefore includes AGR-systems. This risk cate-

gory of AI systems should according to the AI Act be banned across the EU in future, with the exception of use for law enforcement purposes. This categorization also highlights the serious dangers and risks of technologies such as AGR-systems and promises a more protected future for discriminated groups like gender-queer people within the EU regarding computer vision systems.

Chapter
03

Unlearning Gender - Computer Vision in Artistic Practice and the (Re)shaping of the Social Constructs of Gender

3.1 Unlearning Gender - Deconstructing Gender through artistic Practice

3.1.1 Introduction

In this chapter, I will focus on the centrepiece of this thesis, the artwork "Unlearning Gender". This is an interactive digital media installation realised in the context of the course "Critical Data II" by the artists Miguel Rangil and Jelena Mönch as a joint art project in year 2023. The main themes of the installation are the questioning of binary gender, demonstrating the possibility of a non-gendered perception of people, and a critique of computer vision. The focus of the critique of computer vision is on AGR-systems, which are used and reused in the installation. The artwork in question and the artistic practices used in it demonstrate how gender can be deconstructed by (re)using this technology. In order to explain this in more detail, the following subchapters will deal with topics such as the background of the artwork, the steps involved in creating it and our exhibition experiences.

Starting with the chapter ***"Political Stance on AGR-Systems"***, which, as the title already suggests, deals with a personal political statement in relation to AGR-systems. In this context, reference is made to the previous chapter "Automatic Gender Recognition" and a personal opinion on how to deal with the systems mentioned is given.

In the following chapter ***"Personal Background, Motivation & Goals"*** I will explain Miguel Rangil's and my personal background in relevance to the artwork, our motivation for starting the project, as well as the goals we aimed to achieve through the realisation of the artwork.

The chapter ***"Artwork Development"*** goes on to describe the main steps in the realisation and development of the artwork. Thereby it outlines how the project was initiated, what the first idea and concept looked like, how the first prototype including set-up was realised and what adaptations of these looked like.

Following, the chapter ***"(Re)using Computer Vision for artistic Practices"*** explicitly refers to the use and repurposing of face detection and the AGR-system in the realisation of the installation. Here reference is made to the movement of Xenofeminism and the instrumentalisation of computer vision aesthetics in the context of the artwork is described.

The subsequent chapter, ***"Limitations",*** deals, as the title suggests, with the limits of the artwork. In particular, it is about the limited perspective of the artist, which can be transferred to the realisation of the artwork.

The larger sub-chapter ***"Exhibitions & Audience Experience"*** deals with the experiences of the artists through the exhibitions of the project and also covers the interaction with visitors through talks, presentations and workshops in the context of the installation. This is based on experiences gained as part of the group exhibition "Quantified Perspectives: Re-thinking Data Narratives" at the University of Luxembourg, as well as through participation in the group exhibition "Resonating Selves" at Ars Electronica Festival 2023.

The following chapter ***"Gender Performance & AGR-Systems"*** deals with the interaction with the installation, specifically with the interaction with the AGR-system, and reports on findings in the context of the functioning of these in the context of the artistic research.

The concluding chapter, ***"Summary & Findings"***, sums up results and discoveries described in the previous sub-chapters and refers to the guiding question of the thesis. In this chapter, parts of the key question are answered by the findings of the artistic research.

3.1.2 Political Stance on AGR-Systems

Since the creation of mine and Miguel's artwork takes a clear stance on AGR-systems, I would like to emphasise and explain my personal position before going into more detail about the artwork. I consider this fundamental for gaining a deeper understanding of our intentions and goals for the project.

As already described in detail in the chapter "Automatic Gender Recognition", the basic conception and implementation of such systems contain biases that follow gender stereotypes and presuppose binary gender. In addition, as already mentioned, AGR-systems are based on the idea that gender is something ascribable - supposedly recognisable by an external view, whether algorithmic or not.

I disagree with all of these principles. In my opinion, gender stereotypes restrict freedom and any reproduction of them is a danger to the unrestricted development of personality. In my opinion, a binary system of gender cannot be a non-violent solution either, as also shown on a scientific basis in the chapter "The Social Construct of binary Gender". As explained in this chapter, biological sex

corresponds to a spectrum and cannot be simplified into a binary system without leading to gross exclusion and invisibilization. Also, in relation to gender identity, it should be clear that a binary system excludes genderqueer perspectives and thus, for me personally, follows a violent act of denial. In addition, ascribing gender instead of enabling self-identification is, from my perspective, an approach that neither allows for the existence of individual realities nor follows the principle of self-determination.

Moreover, as already explained in previous chapters, I only see very few, if any, use cases of the application of AGR-systems in which they are in any way beneficial without including strong discrimination and exclusion. Especially in the context that, in my opinion, ethical questions do not play a significant role in the design of these systems or, unfortunately, in their application. I believe that even if their biases are reduced, for example, through a more diverse data set, the underlying problems cannot be solved. This is why, in my opinion, AGR-systems pose a significant threat and should be banned from our society and hopefully will be one day.

Finally, I want to ask how a system that is based on such deep-seated discriminatory structures and ideas can find positive applications and I would like to use this question to lead over to the artwork "Unlearning Gender" to be discussed.

3.1.3 Personal Background, Motivation & Goals

I am defining myself as agender and therefore as genderqueer, which definitely influenced the idea and development of the art project. From a social perspective, identifying as genderqueer often seems to focus on the individual, but I personally want, in contrast to this perception, to express a critique of the construct of binary gender through my identification. Identifying as being outside of a dominant norm felt like I was the problem, even though, from my perspective, the binary system as well as patriarchy are the issues. Therefore, questioning the system of gender identity, which, as quoted before, accepts the system of gender as a construct, even though there is no binary one, is the only consistent solution approach for me. But since social reality is still far away from this theoretical approach, identifying as genderqueer is one of the few political possibilities for me and represents an important political tool in this context.

Because of my great interest in questioning gender, arising from my own genderqueerness and political stance, I practice an in-depth examination of the topic. During the process of coming to terms with the construct of gender, I attended lectures for gender studies, which greatly furthered my education in this area. As a result, they were a major influencing factor in the ideation process of the artwork. Furthermore, I read the book "Exit Gender", which I already mentioned in the chapter "The Social Construct of binary Gender", due to my strong interest driven by my personal genderqueer background and my feminist political stance. This book was a great inspiration for me with regard to the artwork and the action concept explained in it represents a large part of the concept of the installation. Thereby, to sum it up, my personal background had a major influence on the creation and development of the artwork.

This personal connection to the topic of gender was one of the main reasons why I chose to deal with it artistically. Additionally, through my further education in the field of binary construction, it seemed incredible to me that a large majority of our society sees binary gender as something natural and unquestionable. One main motivation was, and still is, to change this social attitude, or at least to bring about a questioning of it. Additionally, I saw a great opportunity to further educate myself through the research and artistic practice, which went hand in hand with the creation of the artwork.

Thus the artwork in question was created in collaboration with Miguel Rangil, I will also present his motivation for choosing gender as a theme. As he told me in a written interview, similar to mine, one of Miguel Rangil's main motivations was the need to abolish gender boundaries and sees this motivation as the reason for the project's creation. Having previously worked on artworks that question and criticise binary gender and sexist logics, he considers our joint project "Unlearning Gender" as a further pursuit of research into these topics, which is driven by his personal interest and queer background. (Rangil, 2023, p.1)

Regarding our shared motivation behind choosing the topic of computer vision, we both consider this form of technology to be utilising discriminatory concepts. We are very critical of the so-called detection of race, gender and sexuality by computer vision algorithms, which often emphasise discriminatory norms and prejudices. Therefore, our motivation is to denormalize the patriarchal assumptions on which these systems are based by exploring the possibilities of creating alternative, inclusive and fluid perceptions and representations of gender and identity. (Rangil, 2023, p.2)

The objectives that I briefly mentioned in my motivation, Miguel Rangil and I defined together before starting our project. In this context, we noted several goals, such as drawing attention to the questioning of the gender binary and creating a practical application of this questioning through our artwork. In addition, the problematic conception, functionality and use of computer vision services, as well as drawing attention to the invisibility of subjectivities that do not adapt to the algorithmic gaze, were our main objectives (Rangil, 2023, p.2). Moreover, our aim was to create space for discussion and educate visitors in these two areas. As interacting with visitors was one of our main concerns, we included other formats, like the workshop, in addition to the installation.

3.1.4 Artwork Development

In this section, the individual steps in the creation and development of the artwork are described, starting with how the collaboration and the project idea came about. Following this, the first ideation phase and conception of the project are outlined and the research for the technical implementation of the concept is presented. Further adaptations of the concept and first applications are explained, as well as the installation setup and its interaction concept. In the subsequent part of this chapter, the first prototype of the installation is presented, as well as its further development and adaptations made in the context of various exhibitions. In the last subsection, the development of the workshop is discussed, as are other collaborative aspects of the project.

How it started

The project started as part of Manuela Naveau's "Critical Data" courses, which analysed the various biases in the context of data and AI. We were introduced to various artistic approaches and projects, ranging from anti-sexist voice assistants to racism-critical AI-based image generation of the alleged profile of a criminal. These various influences and thought-provoking impulses, also accompanied by lively discussions in the lecture context, laid the foundation for critical thinking, which we were to deepen independently through our own artistic project in the second part of the course series. As part of my examination in the course series on the implementation of sexism in AI applications and this criticism of the artistic practices of artists, I wanted to go one step further with my artistic examination and not only represent the discrimination of the female gender but also further question the structure of gender itself. As part of my research for the project ideation, I came across an article that criticised AGR-systems and explained their widespread use and implementation by large technology companies. This state of affairs, which was very shocking to me, inspired me to create a counter-playful reaction in an artistic form. As I was reading the aforementioned book "Exit Gender" at the time, I came up with the idea of using its methods to redesign AGR-systems as a counter-initiative to the mentioned development.

During these initial phases of ideation, I wrote a conceptional text in which I formulated the vision of a computer vision system that implements the exgendering method. I presented this as part of the "Critical Data II" lecture, which Miguel Rangil also attended. As he also wanted to work with the poetics of computer vision in the context of gender deconstruction (Rangil, 2023, p.1), we decided on a collaborative realisation of the idea presented. Our shared interest in the social, cultural and technological questioning of binary gender, as well as Miguel Rangil's previous knowledge and experience in the field of computer vision through his work on the artistic project "[x]enoimage", seemed to be the ideal prerequisites for our joint work. So our similar artistic approach and political opinions led us to a shared artistic project.

First Concept

Our first conception and the related search for answers dealt with questions such as how society could think without the categories of gender, how a computer could see people without gender and what a new form of categorization and recognition could be. Following the first fundamental questions, we dealt with the concept of "exgendering", a process already explained in the chapter "Deconstructing Gender".

To implement this concept in the context of computer vision and to answer the second question of how computers could see people without this category, we came up with the idea of refunctionalising computer vision systems. This is how the first idea of a system was formed, which should exemplify how people could be perceived without gender and described with attributes that are not associated with gender. Thus, instead of a bounding box with a clear label of "female" or "male", a description of the attributes of the analysed person should be used. But here, too, there are subtle and yet very important differences. For example, instead of a man with a beard, the description would be of a person with facial hair. In other words, a genderless description should also stand up

to the enumeration of characteristics that are otherwise frequently regarded as gendered in our society.
In a nutshell, our approach consisted of exgendering the perception and reading of our system, as well as letting go of gender attributions. This was to be realised by describing characteristics in great detail and forming new categories.

But how could these categories look? And how could we ensure that these do not also take a discriminatory form?

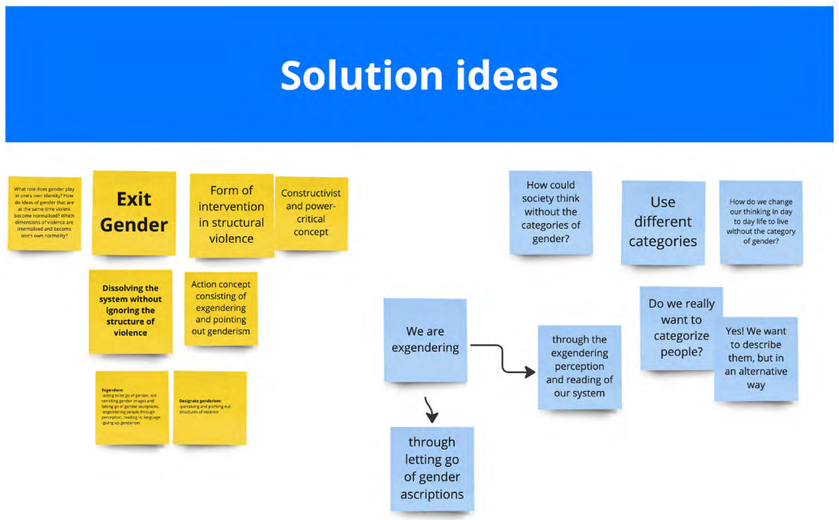


Figure 3.
Collection of post-its showing solution ideas

The illustration (Figure 3.) depicts Miguel Rangil's and my notes from our shared Miro board, exploring different approaches to our solution.

To answer these questions, we collected alternative categories, also based on the book "Exit Gender", shown in the figure on the next page (Figure 4.). These categories ranged from different facial features, like wide eyes or small mouths, to a person's gestures and body language. During this analysis, we were always accompanied by the question: What defines the omnipresent norm in all these categories and how is a deviation from this represented by the defined categories.

Figure 4.
Collection of post-its showing alternative categories.

Research for technical Implementation

In order to technically implement this first approach for a computer vision system that followed the concept of exgendering, we researched for technical ways of detecting details that could be used to describe a person following our alternative categories. In doing so, we focused on data sets and systems that are based on real-life video recordings, as we visualised visitors interacting with our installation in real time and through video, like an augmented mirror. In the course of our research, we came across data sets with sound analyses, which would have been useful for our category of acoustics. We also discovered a body language data set, as well as a system called OpenCV for face detection and the detection of facial features. Additionally, we encountered data sets for recognising colour, which we considered useful with regard to the category of hair.

Unfortunately, the above mentioned systems were mostly still very immature and had inaccurate tracking as well as imprecise recognition results. In addition, there were either only very small data sets or none at all for certain characteristics such as tattoos, glasses and piercings. This technical status changed around six months later when Facebook released their recognition tool, "SAM",

which is short for "Segment Anything Model", which is able to recognise and segment a broad variety of objects. This, therefore, would have been an adequate tool for recognising details about people, like their clothes and accessories. However, in the period of our project development, the only systems that seemed to be fully mature and easily accessible were categorization systems for emotions, age and of course gender. As age and emotions are again ascriptive attributions based on oversimplifications and questionable concepts, we decided against using such systems so as not to fall into the same trap as the ascription of binary gender by computer vision.
Since the majority of our categories had only very sparse data sets available online at the time, if at all, it seemed to us that the only way to implement our categories as planned was to use a platform called "YOLOv8" with data sets and training systems that we would have to create ourselves. However, building our own data sets and the associated systems from scratch seemed to be a large and, above all, very time-consuming option. In addition, our limited technical knowledge in this area seemed too inadequate to successfully complete such a task. We therefore decided to look for an alternative way of explaining the concept of exgendering through computer vision. Since most of the computer vision systems in the OpenCV library are stable, albeit somewhat older, and real-time detections are possible with its "Haar Cascade" algorithms, we focused on this system for a new approach. However, after our tests, we ruled out using facial feature recognition with regard to the inaccuracies of the system.

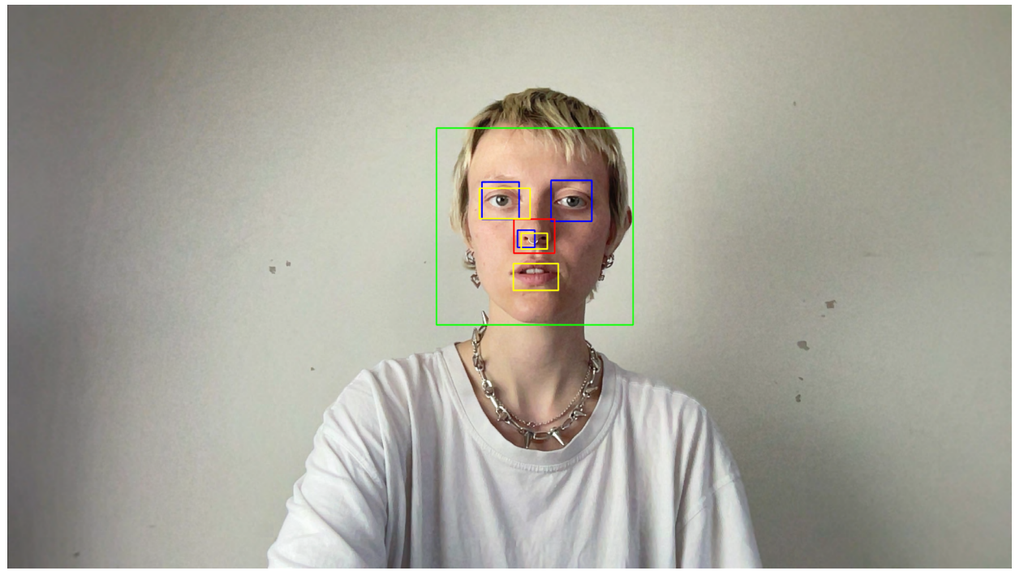


Figure 5.
Webcam Image showing detection of face recognition and facial feature on my face.

The image (Figure 5.) on the previous page depicts an early test of the OpenCV system by myself and Miguel Rangil. We tested the face recognition (light green bounding box) and the facial feature recognition (blue = eyes, yellow = mouth, red = nose bounding boxes). In order to use this system for our category of facial features, our idea was to query the size of the boxes and choose an attribute for a description depending on the deviation from the standard as specified by us. This seemed easy to implement in the code, but as shown in the illustration, the recognition and differentiation of the various facial features did not work due to errors in the basic system.

Concept Adaptation and first Applications

After this experience with the attempt to implement the concept of alternative categories, we took a more exploratory approach when adapting our concept. Based on the OpenCV library, Miguel Rangil and I experimented with different visualities by modifying the Python code of the different applications.
When working with the OpenCV algorithms, we had the vision of achieving a less clear, perhaps even fluid representation of the bounding boxes, as the clear demarcation of these, together with a label, had a very striking visual language for us in terms of binary gender. Breaking up this visuality through a less clear demarcation and ambiguity was therefore one of the intentions of our first attempts. Not categorising and the fluidity of gender were at the forefront of this approach, which is why fluid and morphing bounding boxes instead of squares or random, quickly changing, flickering bounding boxes seemed to be a suitable visual representation for this. As the implementation of round, flowing shapes seemed difficult for us to realise, after a few attempts, we experimented with the background detection of OpenCV and changed it by rewriting code. After a few test runs, we came to a satisfactory result, in which, as shown in the figures, displayed many different sized bounding boxes labelled with random numbers covered randomly appearing sections. These flickered quickly and wildly, so that it seemed as if they could not grasp anything and yet kept on trying. Its wild confusion and chaotic nature fit well with our idea of breaking up the clear and straight visuality of detection by bounding boxes (Figure 6. ans 7.).

To implement the concept of exgendering into the visuality of computer vision, we played with long descriptive, rather poetic texts instead of clear alternative categories. Herein, our idea was to create an ambiguous, broad poetic description of the person through ChatGPT with a few simple details about that person.

In this way, we wanted to avoid the technical problem of clearly recognising different characteristics and instead create a description that would only go into one or two details of a person's appearance so that they could still recognise themselves in it. A physical detail of the person was to be recognised live by the system and also incorporated by ChatGPT in real time into a verbose, descriptive text. However, as we had already discovered from our research, creating a system that would be able to recognise such detail would be quite time-consuming, which is why we initially began experimenting with descriptions written by ChatGPT without implementing any personal details of the person detected. This gave rise to the idea of an endless description of a person, which metaphorically stands for the versatility and fluidity of personal or algorithmic perception. To implement this in a computer vision system, we modified the face recognition code of OpenCV and played with different visualisations. One of them was to slowly write the text line by line inside the bounding box, fading out the face of the interacting person step by step from the description (Figure 8. and 9.). One of the things we liked about this visuality was the fact that the person's face was still recognisable through the text and that we could use this overwriting of the face metaphorically to define and overwrite the person's personality. Despite our less discriminatory and less externally ascriptive approach, this design should illustrate that any form of description nevertheless represents a limitation and restriction of personality.

As part of the experiment, we also created another version that works with face detection and the wage description of the person. Here, in contrast to the previous version, the text is not displayed within the bounding box but above it. As a result, the text breaks out of the top of the video image as soon as a few lines of words have accumulated, emphasising the "infinity" of the text (Figure 10.).

In developing these different versions, we had already created a significant part of the software required for our installation. However, since the context, i.e., the criticism of AGR-systems, did not seem clear in the presentation, we decided to display the gender-based recognition model (CV Gender) from the OpenCV library alternately with our variations. This was intended to create a contrast that would give more context, therefore making it easier for visitors to understand our intentions. Alternating from the so-called "recognition" gender labels of female and male to many wildly jumping boxes and the increasingly long poetic description seemed clear enough to us as a statement that critical questioning on our part would become clear in the exhibition context.

"So language and thought already relates to my body, to my senses, and it gives me a visceral pleasure to make the connection explicit, by naming a piece of text "my foot" or "my fingernail."

Writing is like shedding skin, no, because it's living flesh, though writing is not like having babies, I've never quite taken to that metaphor (maybe because I've never had a baby), it's more like stitching together a monster out of bits of your self and bits of other stuff and sending it out to do things for you. It's a fetch, a demon double, neither you nor clearly separate from you. And it goes and presses itself on people, it infiltrates them. But this relationship works in reverse, as well: texts are like bodies, but bodies are like texts, too. They aren't simple, self-evident things, they're composed."

Shelley Jackson (Amerika, 1998)

Figure 6.
Webcam image showing our alternative computer vision detection on me, consistent of multiple bounding boxes.

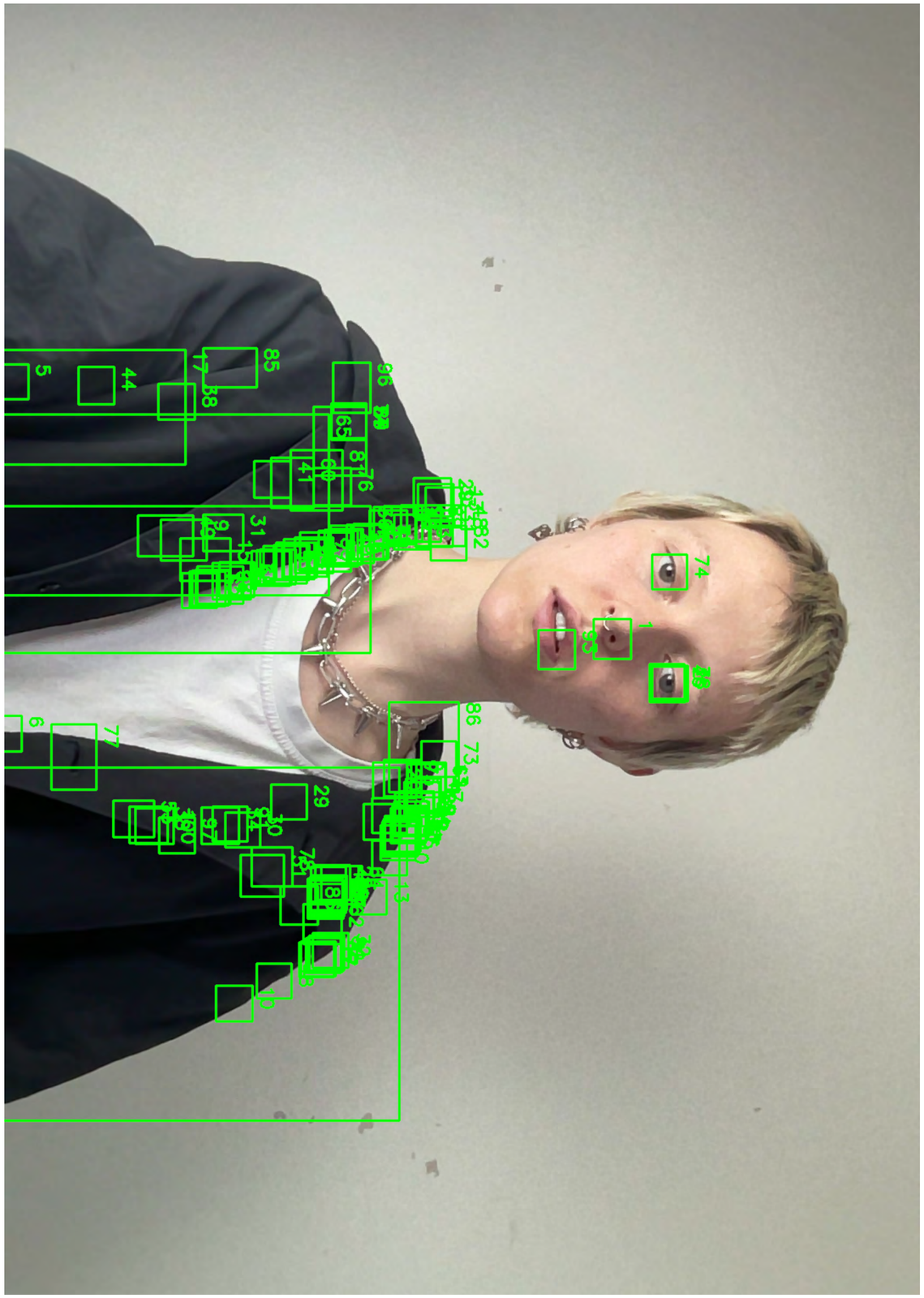


Figure 7.
Webcam image showing our alternative computer vision detection on me, consistent of multiple bounding boxes.

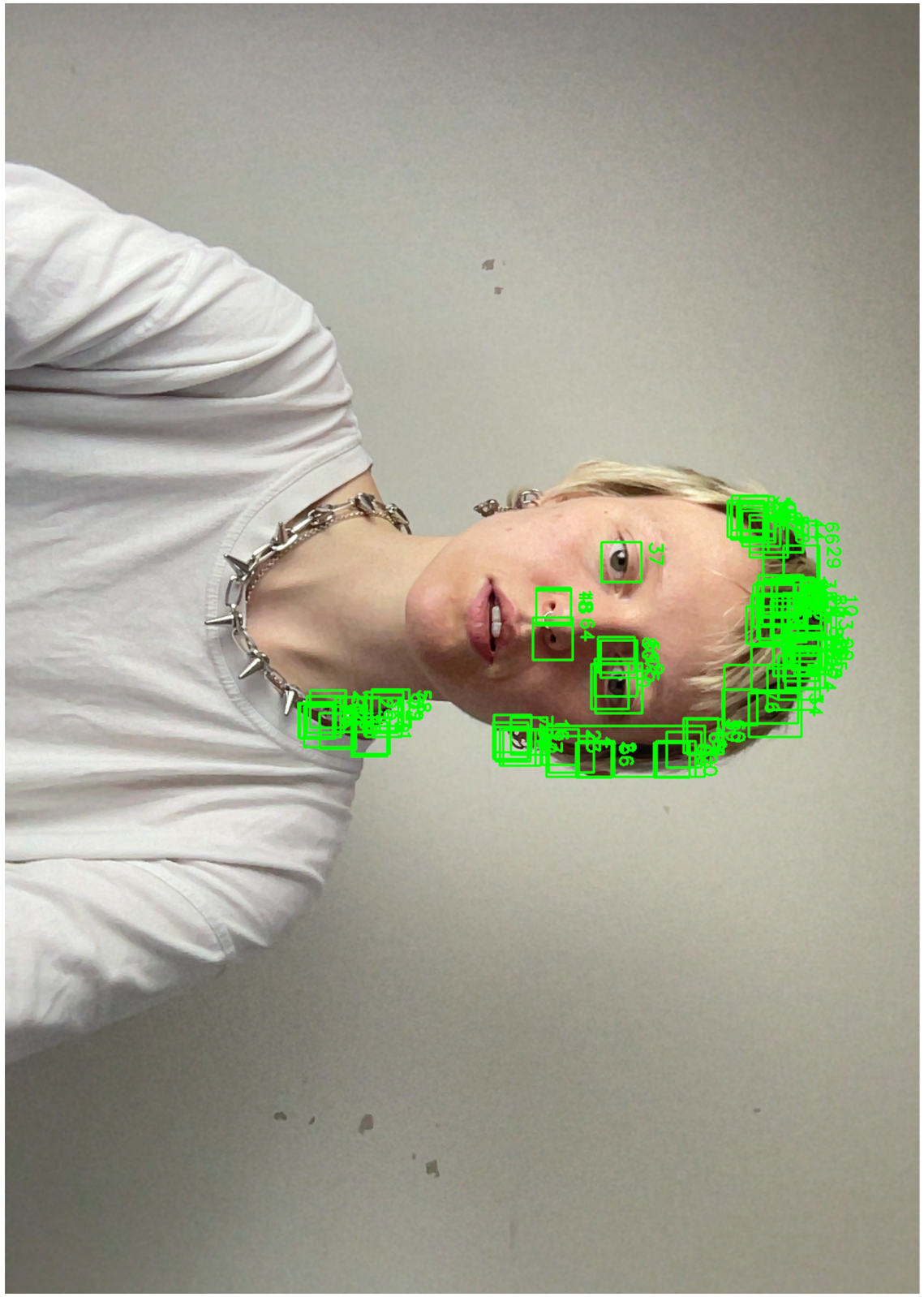


Figure 8.
Webcam image showing our alternative computer vision detection on me, consistent of an endless description in a bounding box

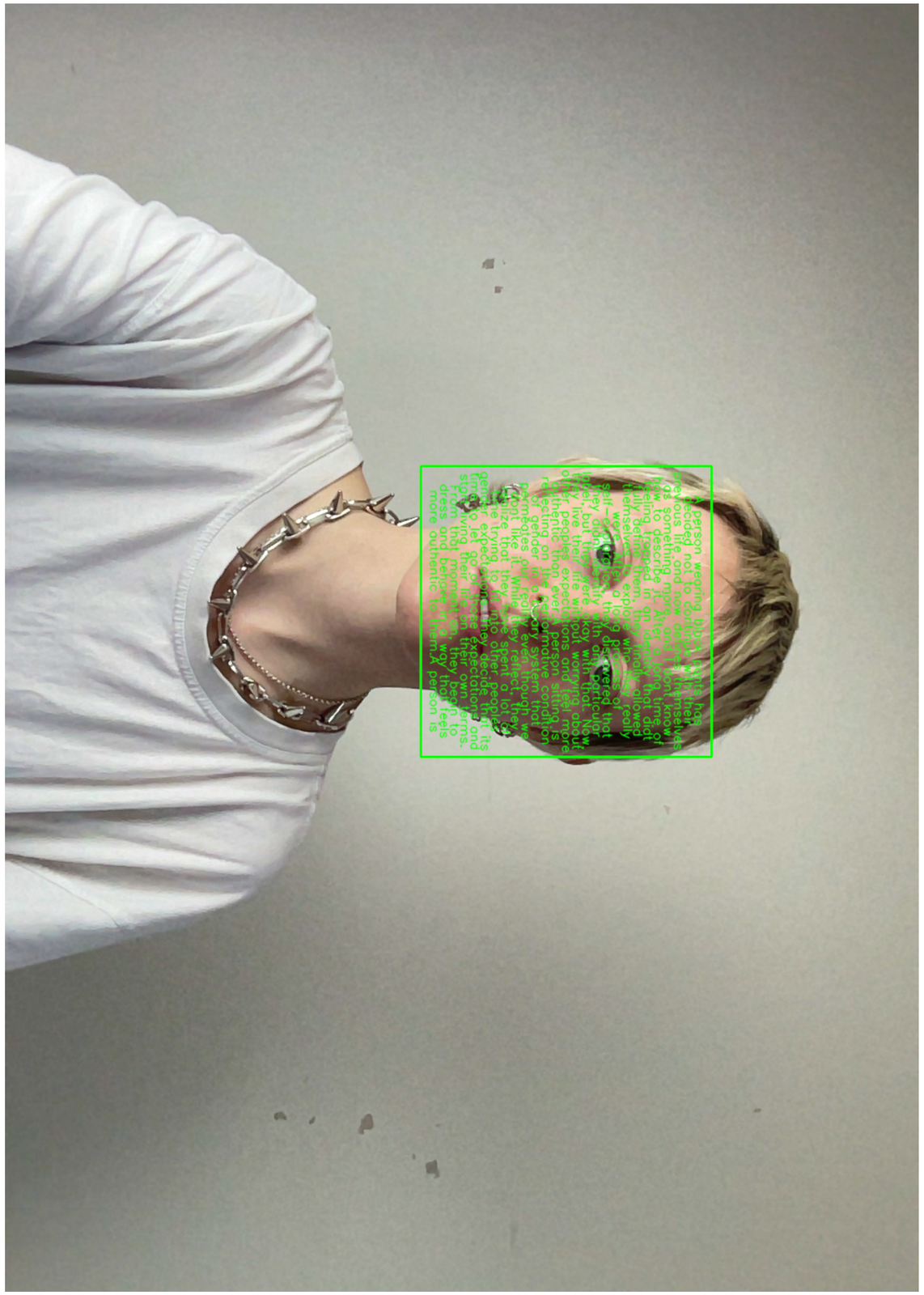


Figure 9.
Webcam image showing our alternative computer vision detection on me, consistent of an endless description in a bounding box

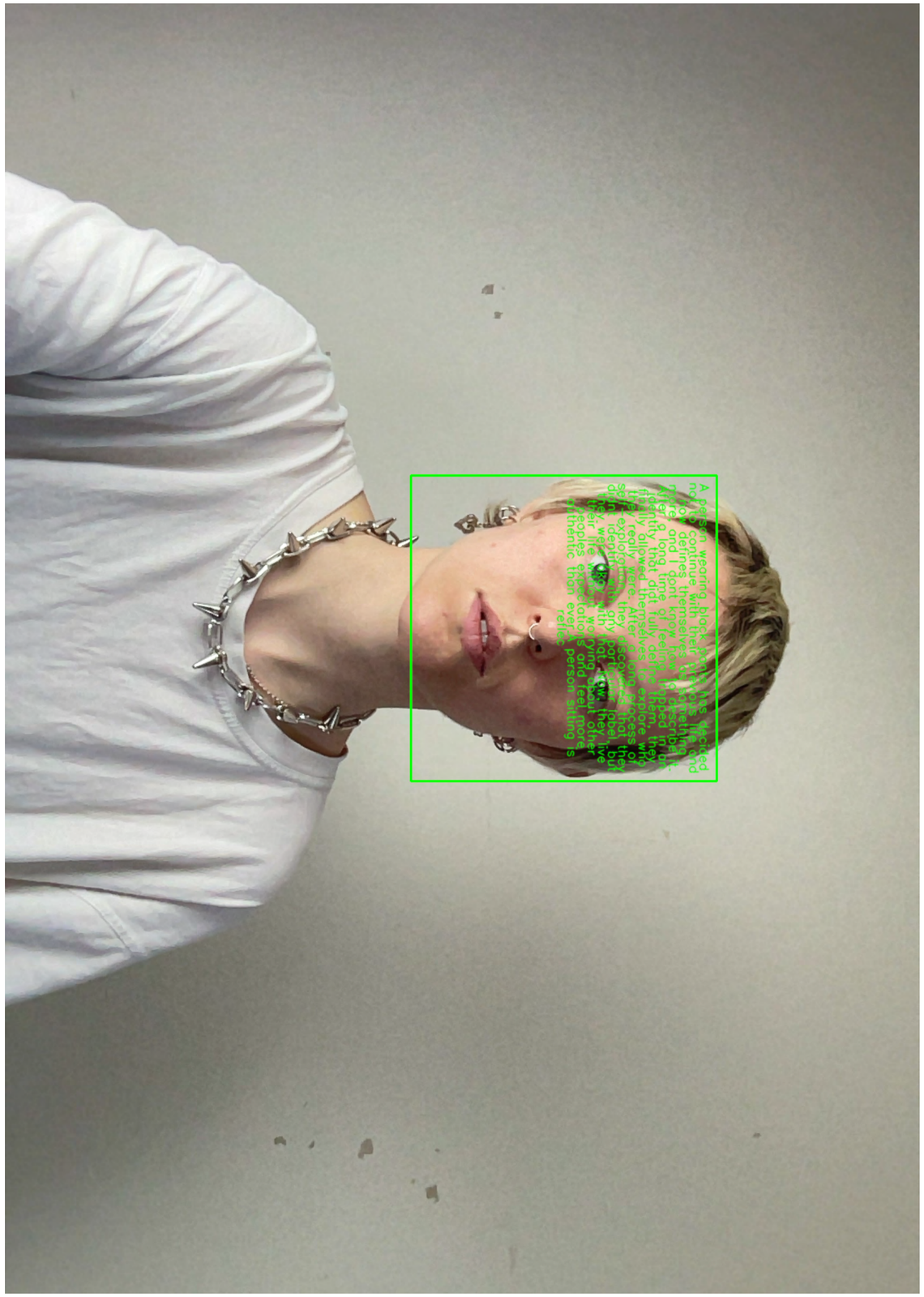
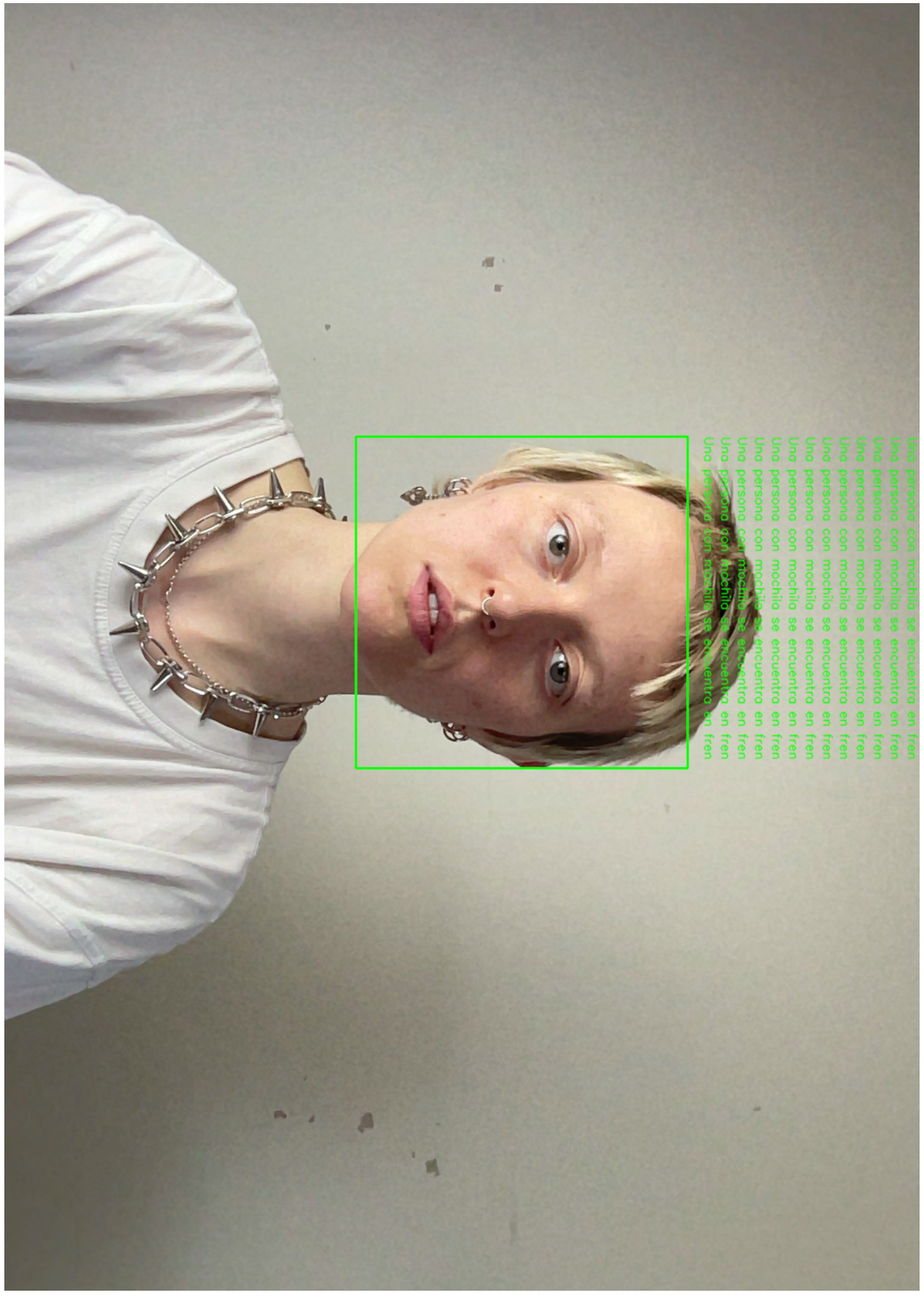


Figure 10.
Webcam image showing alternative computer vision detection on me, consistent of an endless description on top of a bounding box.



Installation Setup

After we had created the first technical applications, we started working on their presentation in an installation setup. ***What could the installation look like and how could the design invite interaction?***

Having explored two very different approaches for the software of the installation: the non-categorising version and the endless description version, we came to the idea of showing more than just one mode in our installation, which we felt better reflected the diversity of perceptions or possible interpretations. This was particularly important to us in regards to the context of gender. Our aim was not to show the "right" way of perception and categorization, as computer vision originally does, but to create space for multiple approaches, which is why showing several applications made sense conceptually.
However, the presentation on three screens seemed much more appealing than only two would regarding symmetry, so at this point in our process, we decided to either display one mode twice or to create a third one.
For the positioning of the screens, we had the idea of aligning them vertically instead of the usual horizontal rotation to create a more mirror-like appearance. A key consideration here was that this mirror-like installation set-up, which was to be created on the one hand by screen alignment and on the other by the live camera image displayed on them, aimed to evoke an association with self-reflection and personality in the visitor. Thereby, the visitor would not be looking at their mere reflection but instead at a modified and extended representation of their person, as described in the previous subchapter. We anticipated a more profound effect from this augmented representation, an extended digital reality, if this visitor interaction resembled an everyday one, such as looking in a mirror. Additionally, we planned on placing the screens like a folding mirror on an antique dressing table; this would offer different perspectives on the person standing at the centre of the installation. Our aim here was to create a more exciting and intimate feeling of interaction by showing various perspectives, and secondly, to achieve a more self-contained effect for the installation as a whole. To achieve this multi-perspective presentation, we opted to use three webcams to capture and record live video. The cameras were to follow the orientation of the screen to which they belonged. Continuing on the idea of the digital mirror, we planned to position the screens and their attached webcams at the eye level of standing visitors. Which is why, depending on the exhibition space or installation location, we wanted to either mount them on a

suitable wall or use stands for flexibility. At the same time, we planned to leave enough space for one person, or even a very small group, to fit in the centre of the installation and still be captured by the cameras from all sides.
In order to ensure that the tracking and detection of the software would function correctly and to enable a clear camera image, we planned to use a light source placed near or behind the screens to illuminate the interacting visitors. As with taking a photo, light from behind would otherwise make it difficult to recognise details and thus destroy the illusion of reflection that we were seeking to create. Illuminating the visitors' faces well was particularly important, as this is often the focus of visitor interaction. To keep the computer that controls the installation out of the visitors' field of vision and interaction possibilities, we planned to place a box behind the screens to accommodate it there.

Concept Adaptation and first Applications

During the course of our installation planning, we also considered the interaction between the visitors and our software. Our first approach was to allow the gendered view, i.e. the cv gender system, to run as default and only switch to our alternative applications after 5–10 seconds of interaction, which would mean the permanent detection of a face. As soon as the interaction was over, i.e. no more faces were continuously detected, the system should switch back to the default status. This interaction process is also shown in figure 12. below.

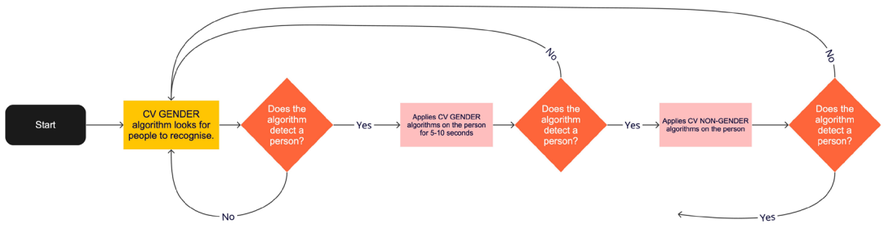


Figure 12.
Flowchart of the functioning of the Unlearning Gender installation.

However, we chose not to use this interaction system in the end, as we realised after a few tests that a simple change of modes every few minutes could be more interesting for visitors. In addition, the contrast between the modes seemed easier to grasp because the interaction with the gender-specific recognition model could last indefinitely, allowing the interacting person to experience it repeatedly.

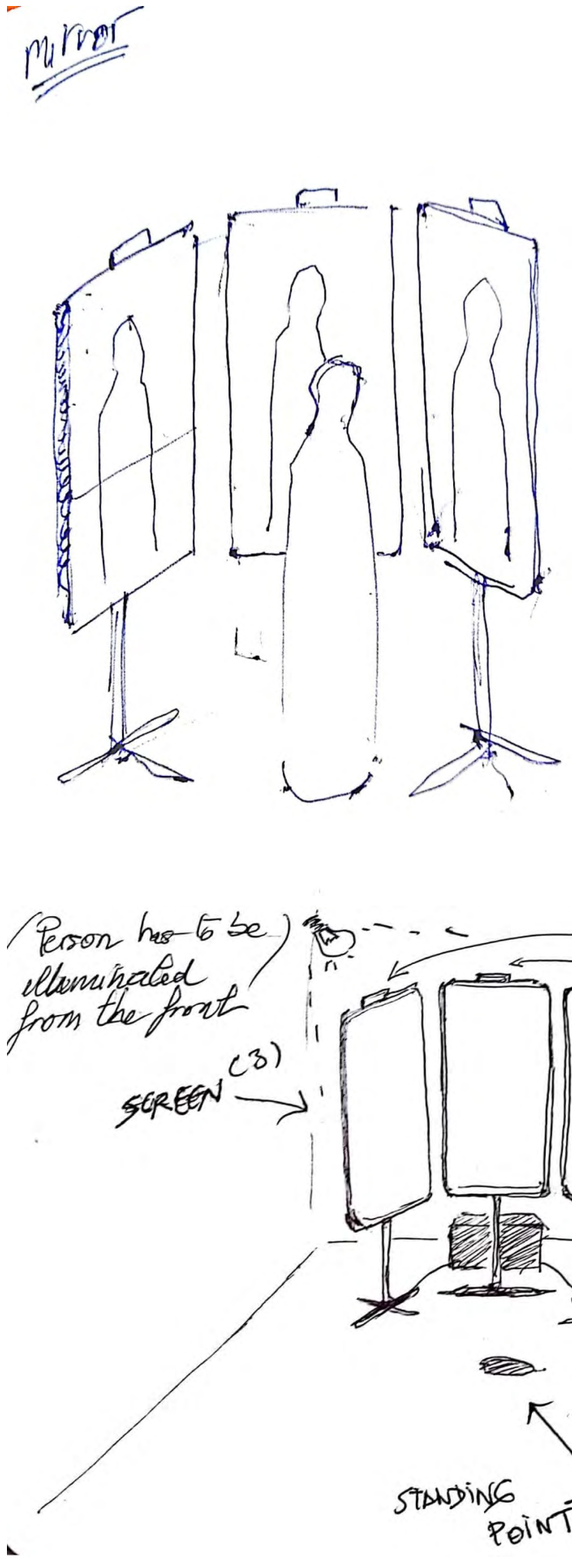


Figure 11.
Sketches of the Unlearning Gender Installation set-up.

First Prototype

The first prototype of our installation was developed in the context of the presentation of artworks for the selection within the Interface Cultures study programme for the Ars Electronica Festival 2023.

Figure 13.
Prototype of Unlearning Gender installation.

It demonstrated our non-categorization software application through two screens, one on the left and one on the right, and the infinite description in the bounding box displayed on the screen between them. Due to time constraints, this version of the AGR-system in the non-categorization software was still using the original colours (male = blue, female = pink) from the OpenCV gender application and not neon green like the rest of the application as intended. Thereby Miguel Rangil and I decided to display all the modes in neon green, rather than different colours, for aesthetic reasons and to maintain some consistency within the system. The two mentioned variations of software switched to the AGR-system after a few seconds and worked fluently in the interaction with participants. The screens used were standard computer screens instead of the larger monitors as planned, as these were not available to us. Additionally, this first setup of the installation was also run from two computers, as we had not found a way to start a screen transmission on three screens simultaneously with one MacBook. The webcams we used had a rather low-quality video output and the lighting situation was still unadapted. Unable to mount the screens on a wall or find appropriately high stands, we chose to place them on a table to elevate them instead. This meant that they were not at the intended eye level of the person interacting, but still high enough to allow a standing interaction. Despite these challenges and unsolved problems, our first prototype was functional and ran without any major errors. To see a compilation of video documentation of this first prototype, please scan or click the QR-code below.

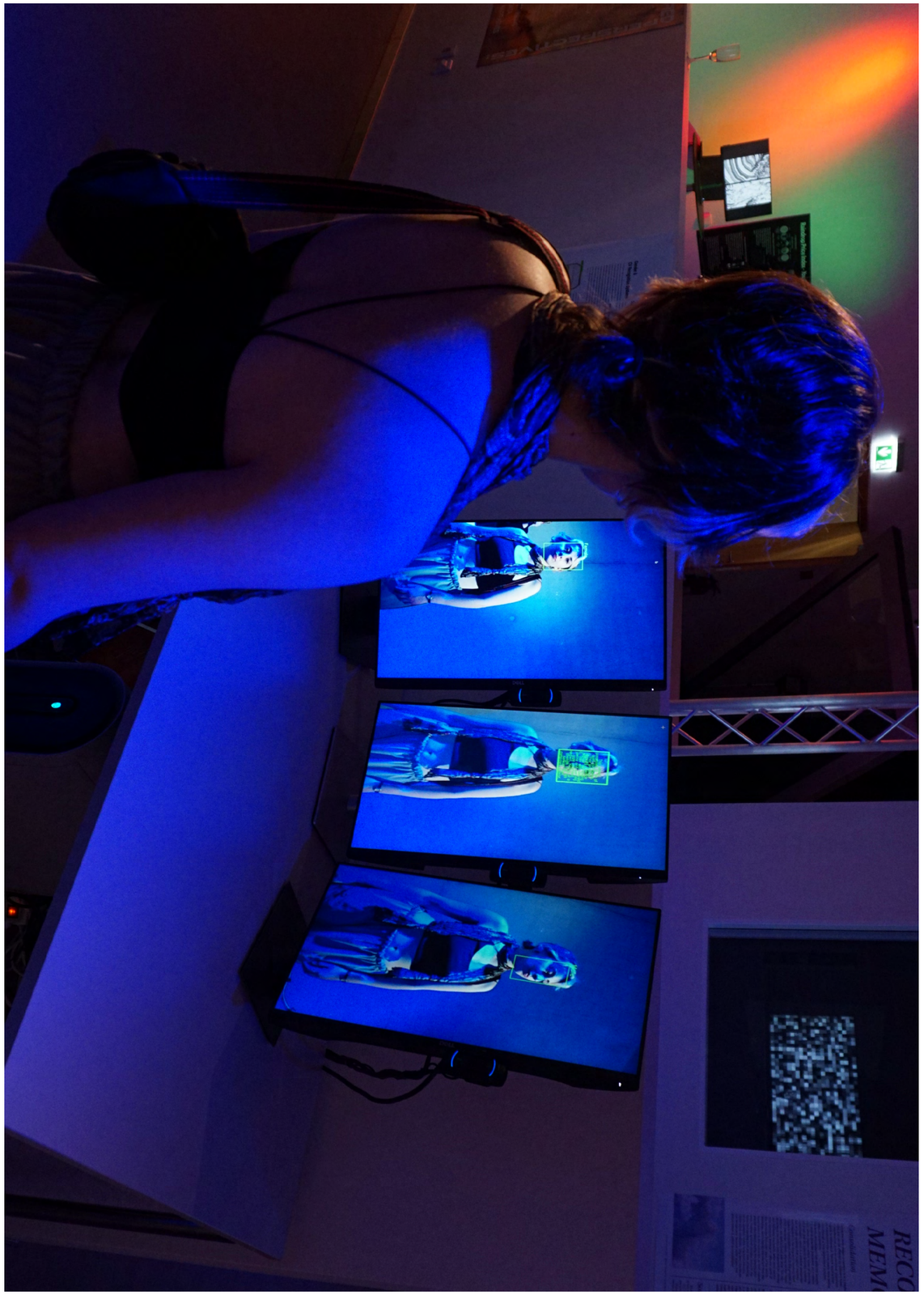
Development and Adjustments in exhibition Context

Our first opportunity to exhibit our project was as part of the group exhibition ***"Quantified Perspectives: Re-thinking Data Narratives"*** at the University of Luxembourg. This was a cooperation between the University of Luxembourg and our study programme in which student projects were selected in an application process as part of the "Critical Data II" course.

As we faced the same limited setup options, we decided to keep the screens on a table to elevate them. In order to achieve the closest possible alignment with the standing visitor's eye level, we angled the screens along with the camera, tilting them slightly upwards. Unlike in our first prototype, in this installation we used cameras with much better image quality that the Kunst-University Linz provided to us, which resulted in a much more sophisticated feel to the installation. Again, we used regular computer screens for this set-up rather than the larger screens we had envisaged in our set-up sketch, but we still felt them to be sufficient. In comparison to our first prototype, in this set-up we had the option of setting up light sources, which made it possible to illuminate the faces of the visitors and create a more pleasant atmosphere through more indirect light sources. Moreover, we had the option of a set-up with a clear background behind the visitors, which allowed for a calmer image of the video recording and made tracking easier for the software.

With regard to the software applications, we adapted all modes to display the neon green colour typical of bounding boxes and optimised them as far as possible. When testing the applications on the computer provided to us, we noticed that the real-time replay of the camera video slowed down considerably after a few minutes. To counteract this, we rewrote parts of the code in order to maximise the efficiency of the application. Unfortunately, this did not seem to solve the problem and after several days of working on the code, we discovered that the issue was not the software but a hardware problem. In other words, the computer provided to us had low performance, which severely limited our installation. This realisation, combined with not having the opportunity to work with more appropriate computers, was quite frustrating, but the installation seems to have appealed to many visitors despite the system's delayed response. Please see a depiction on the following page (Figure 14.).

Figure 14.
Unlearning Gender installation at the exhibition "Quantified Perspectives: Re-thinking Data Narratives".



The second exhibition in which we present our artwork was the group exhibition ***"Resonating Selves" as part of the Ars Electronica Festival 2023***.

Three large rooms were made available to us for this group exhibition, in which a rather large number of projects were to be exhibited. Mine and Miguel Rangil's joint project, was to be positioned in the first and biggest of the exhibition rooms. During an initial inspection of the spaces, the arrangement of the projects was decided upon, as shown in more detail in the following illustration. Following this, our artwork was to be displayed on the wall left of the room entrance as one of the first exhibits in the exhibition. By this positioning, the opportunity to mount the screens on the wall would have been given, which would have offered us a great advantage. The large window to the right of the intended installation position would additionally have provided visitors with lighting. Although there would have been a lateral incidence of light on the visitors, in our opinion, this would be sufficient to ensure the software functioned properly. However, one major change that would have resulted from the spatial conditions of the placement was an open background into the room behind the people interacting with the installation. Consequently, visitors who are in the camera's field of vision without wanting to interact with it would nevertheless have been detected by the system. To prevent this from happening, we adapted the code of the modes to ensure that it only detected people within a close radius of the installation.

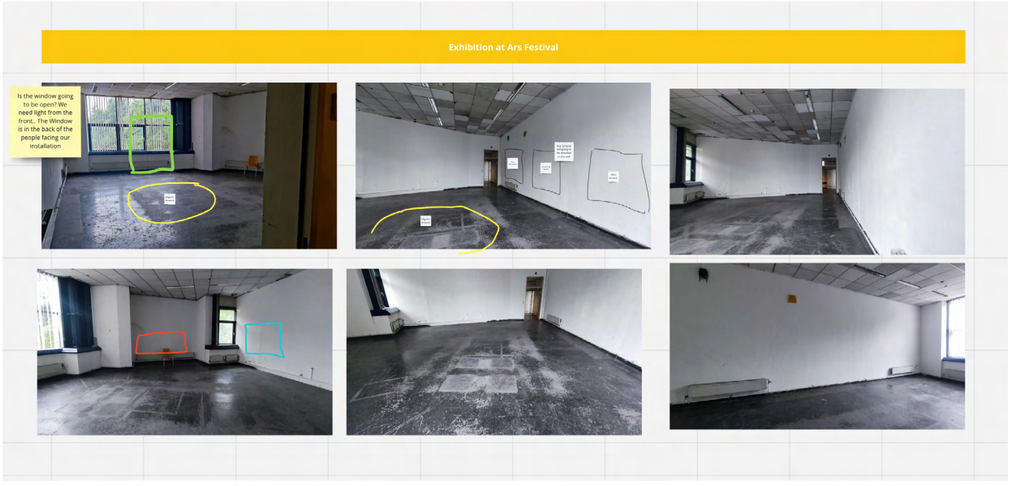


Figure 15.
Photos of the premises of the "Resonating Selves" exhibition as part of the Ars Electronica Festival 2023 including sketches of the artwork placements.

Figure 16.
Photo of a part of premises of the "Resonating Selves" exhibition as part of the Ars Electronica Festival 2023 including sketches of the artwork placements.

So far, so good! However, when we got together for the first day of the exhibition setup, we were informed that the exhibition plan had changed. The position intended for our installation was revised and was to be aligned in a way that would create a direct incidence of light through the windows behind the visitors, i.e. a backlight. After a few tests of the software at the corresponding position, it transpired, as expected, that the software would not work with backlighting, which is why we asked for a different installation location. Fortunately, together we found a solution in which the installation was placed in the center of a diagonal wall in the room, allowing light to fall on visitors interacting with the installation from the side. The following illustration shows the described setup in more detail.

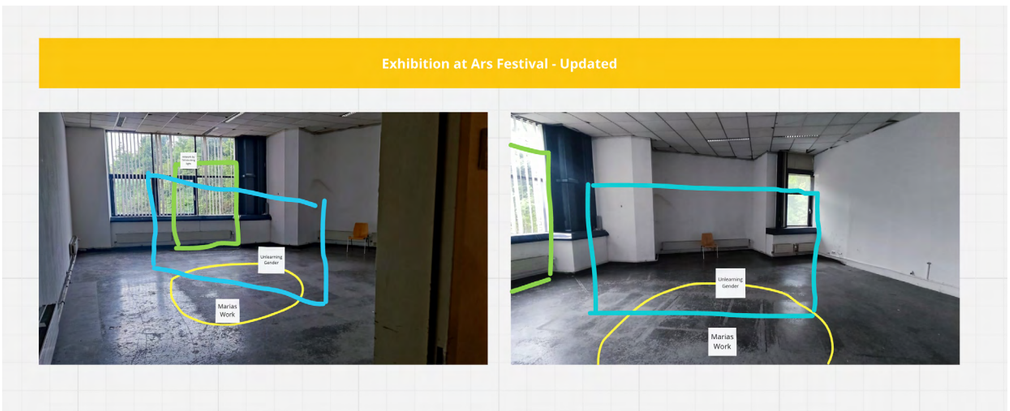


Figure 17.
Photos of the premises of the "Resonating Selves" exhibition as part of the Ars Electronica Festival 2023 including sketches of the updated artwork placements.

The wall in the center of the room consisted of metal pipes that formed a scaffold for our installation and that of Maria Orciuoli. We therefore had the opportunity to attach the installation screens to these, which allowed us to mount them at eye level, bringing our setup closer to its original vision compared to the previous exhibition. For this exhibition, we again received valuable material support from the University of Art and Design Linz. In this context, we received two mac minis with which we were able to run our software on all three screens without any difficulty. As the mac minis were of a modest size, they were fitted behind the screens and the box we had planned for storing the computer became superfluous. Additionally, we were provided with larger screens, which brought the installation closer and closer to the original intended set-up. There were no further adjustments during the festival and we were satisfied with the result, even if a calmer environment would have emphasised the installation further.

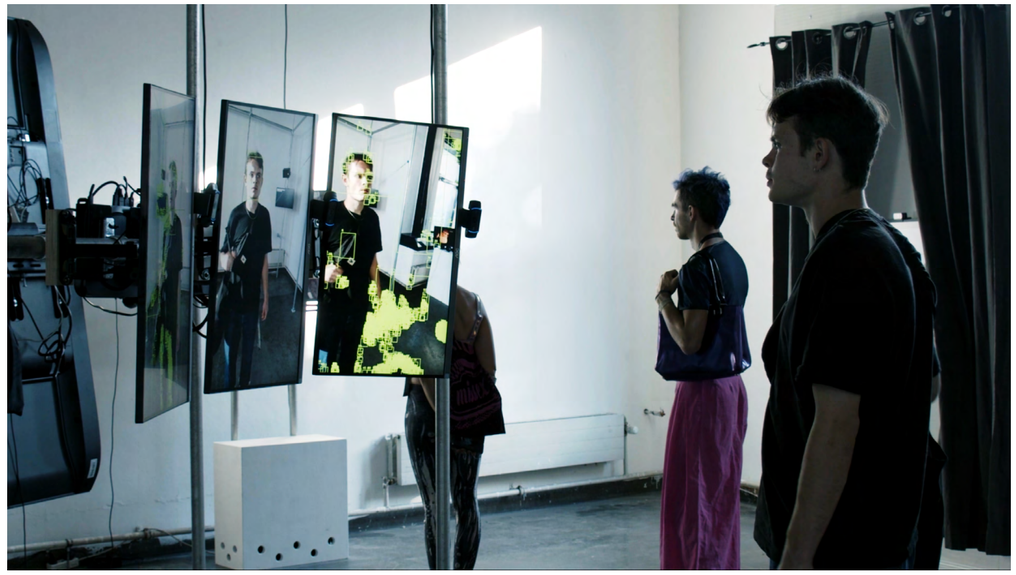


Figure 18.
Unlearning Gender installation at the exhibition "Resonating Selves" as part of the Ars Electronica Festival 2023.

The Workshop

As we were of the opinion that the installation alone would not sufficiently cover the complexity of our topic and spark an exchange of ideas and discussion, we decided early on in the conception phase to offer a workshop alongside the installation. This workshop aimed to facilitate discussion and create a shared space for learning about socially constructed binary gender and its manifes-

tation through computer vision. Additionally, we wanted to use the workshop to gather participants' ideas on how computer vision could portray individuals without relying on discriminatory principles. This resulted in a collective output that we could integrate as an additional modus in our installation. Here, too, we believe there's no single "correct" solution or perception, and representing multiple realities can only enrich the debate.

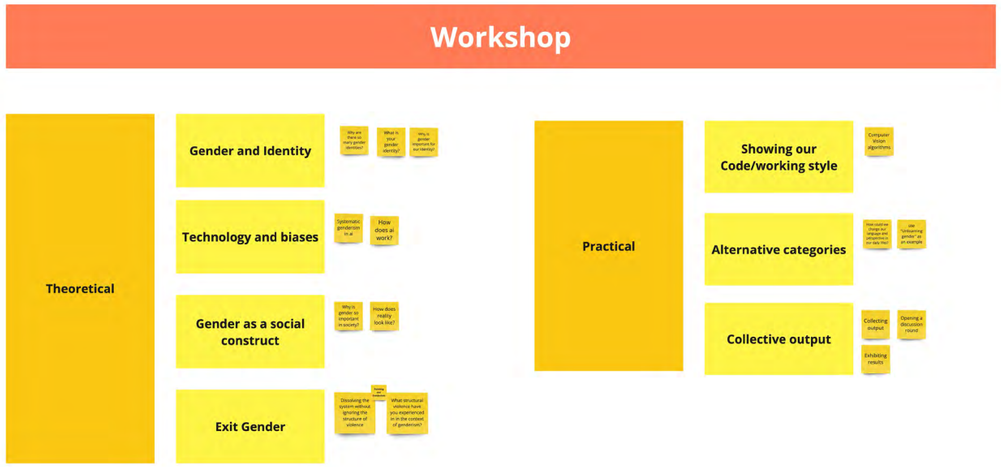


Figure 19.
Planned workshop content.

To ensure a balanced level of knowledge among the participants our planned theoretical foundations included the topics of gender and identity, technology and prejudices, gender as a social construct and the presentation of the action concept "Exit Gender". This part of the workshop was also intended to provide the relevant background knowledge to create a holistic understanding of the artworks approach. In this context, it was particularly important for us to create a dialogue with the material through small tasks and discussion rounds.

The second part of our workshop focused on a more practical interaction centered on an examination of the installation and creation of new, alternative categories by participants. Initially, we planned to share the code and tools used with the participants so that they would be able to realise their own ideas for an application in groups. However, it became clear to us that time constraints, the programming skills needed and the hardware and software required were not realistic. We adapted by asking the participants to sketch prototypes instead. As a result of the workshop, we planned to publicise the collective output through a small exhibition or presentation of the group results. In addition, we had the idea of utilising the collective results to expand the artwork in order to include the perspectives of the workshop participants and therefore create the opportunity for showing multiple perspectives and not just our own.

Once the workshop concept had been roughly outlined, we delved into the practical part of the session. Using the workshop as the framework, we planned four potential exercises for participants to explore alternative categorizations.

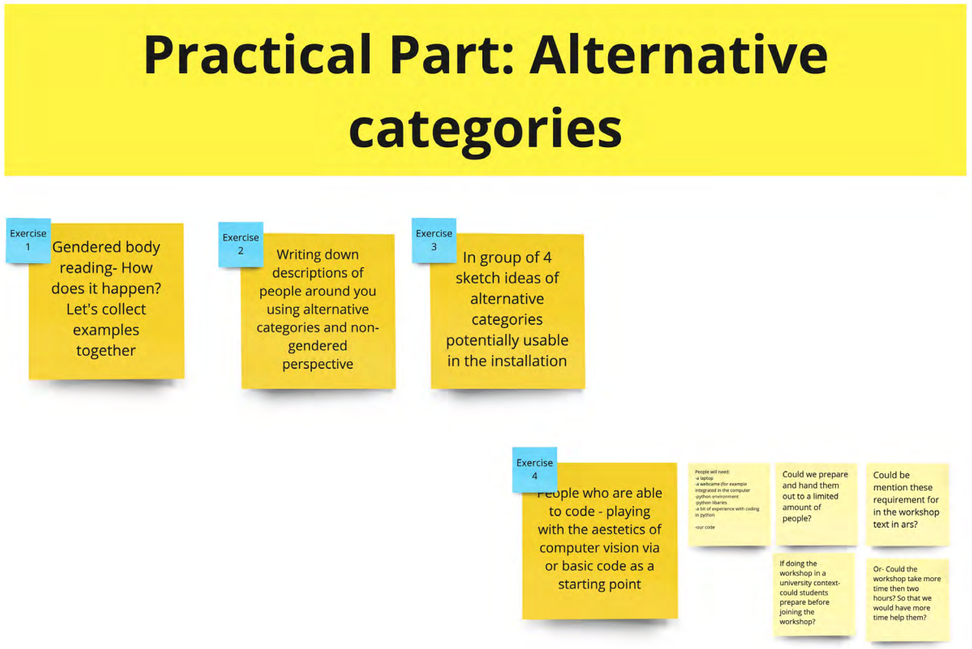


Figure 20.
Planned tasks of the practical part of the workshop.

In the first assignment, participants were asked to look at gendered body reading and answer the question of how this takes place by finding examples and collecting them together. They were also asked to think of concrete situations in which gendered body categorization occurs in our everyday lives. The second task was to write their own descriptions of other participants using non-discriminatory characteristics and without a gender-specific perspective. Here, we focused on training the perception of people without the attribution and interpretation of gender. Participants were therefore encouraged to perceive the world around them without a gender-specific perspective. The third exercise asked the participants to work in groups of four to sketch out ideas for alter-

native categories that could be used in the installation. This meant that the process of ideation and visualisation of the categories was supposed to take place in this exercise. The fourth part of the task, which could not be realised due to the logistical constraints previously mentioned, would have asked those who could code to play around with the aesthetics of computer vision using our basic code as the foundation and implement their own concept of the application. The final exercise posed a unique challenge to us and demonstrated that the workshop setting would be crucial. We envisioned the workshop ideally situated within a technical course setting, where participants could prepare for the technical aspects beforehand. In contrast, the context of the workshop within an exhibition or festival setting did not appear to align well with the objectives of the final task with participants.

3.1.5 (Re)using Computer Vision for artistic Practices

This chapter discusses the theoretical background of reusing computer vision in our artistic practice and the practical implementation of this through our artwork. The book "Xenofeminism" by Helen Hester has had the greatest influence on the theoretical foundations of our artistic practice of repurposing technology, which is why its theories are outlined in the following. Prior to our collaboration, Miguel Rangil had already been deeply involved with the theories presented in the publication and had applied them artistically in the collaborative artwork "[x]enoimage", which led to the great influence of these theories.

The main theme of the book is the refunctionalisation of technology and reappropriation with objectives that dismantle gender. The movement also describes itself as a gender-abolishing form of feminism with posthumanism tendencies (Hester, 2018, pp. 6, 1). In doing so, the book follows the premise and belief that characteristics associated with social categories such as gender, race, class and disability are unequally burdened with social stigma and lead to disparities in our society (Hester, 2018, p.29). The aim of Xenofeminism is to decouple these social meanings from stigmatised characteristics in order to prevent them from being used as markers for discrimination (Hester, 2018, p.29). Accordingly, this movement is dedicated to the creation of a society that, for instance, no longer follows the social practice of oppression under the term "gender" as a summarised characteristic (Hester, 2018, p.29). Additionally, Xenofeminism advocates gender diversity beyond any binary without denying the existence of differences between people, whether through sexuality, culture or identity (Hester, 2018, pp.31-32).

In this context, the movement is focused on formulating a corresponding gender policy within the framework of technology (Hester, 2018, p.7). Here, technology is seen as an activist tool that is analysed according to its potential use for activist interventions, including critical perspectives on it (Hester, 2018, p.8). In this sense, technology is not only seen as positive or neutral, but as constructed and determined by social relationships (Hester, 2018, p.9). It is understood as a social phenomenon (Hester, 2018, p.11) and thus opposes the socially widespread claim to the neutrality of technology.

The focus of the movement in the context of understanding technology is to reappropriate and utilise it for its own interests in ways or means that it was not initially intended (Hester, 2018, p.9). Accordingly, reuse should take place, which, in combination with a movement for more technical expertise, should lead to the effective utilisation of resources that are already accessible (Hester, 2018, p.96). This reuse of technologies is intended to enable social change or upheaval that pursues the political goals of the movement (Hester, 2018, p.97). Thereby, this form of repurposing or appropriation is described as the definition of hacking and is considered an important tool for the realisation of emancipatory objectives (Hester, 2018, p.98). In doing so, the book refers primarily to the examples of reproductive work and abortions in order to explain these theoretical approaches in practice (Hester, 2018, p.102).

In our artistic practice, we have taken up these theories and approaches regarding the reuse or repurposing of technology to disrupt the discriminatory naturalistic gender order by utilising the visuality and technology of AGR-systems for our own purposes. Here we followed the same principle as xenofeminist theory by hacking existing technology, in this case the computer vision algorithms of OpenCV. By rewriting, adapting and using these algorithms to critique the concept they originally served, this corresponds to the described use as a political tool in xenofeminist theory. Thus, the principles and aesthetics of computer vision models are appropriated in our alternative applications, for example, by the utilisation of detection, labelling and framing with bounding boxes, as well as by using the neon green colour (often used as a standard colour of bounding boxes), but by its placement in a new context through our modifications. Thereby we created contrasts to these otherwise common practices. For example, the simple and clearly binary defined gender labels have no existence in our

alternative application, but are replaced by a long, seemingly endless, poetically daring text. And the otherwise clear bounding boxes, that constantly follow the detected objects or persons wildly jump around in our application without clearly sticking to anything. Hacking the mentioned common computer vision visuality accordingly played a fundamental role in the creation of our software, also in order to appropriate and thus question the claims to neutrality and scientification that seem to be intertwined with it.
Even the use of the AGR-system itself in our code to provide an easier understanding of the context of our alternative applications is a reuse of technology in a new setting that contradicts its original intention and therefore follows the fundamental principles of Xenofeminism.
The community aspects of our project also find great parallels to Xenofeminism and were inspired by it.

3.1.6 Limitations

The limitations of our project can be divided into four main themes - the limited possibilities of the technology available at the time, our own technical capabilities, the limited transparency of the system and the restriction of a fully inclusive view due to our privileges.

Arguably the most limiting point in the creation of our artwork is the limited ***state of development of the technology*** in the areas we needed at the time of artwork development, as explained in the previous chapter "Artwork Development" in the subchapter "Research for technical Implementation". Therefore, this part of the paper only summarises this and does not provide a detailed explanation. Accordingly, you will find a longer description in the previously mentioned subchapter.
In our creation process, we lacked access to software that would recognise details of a person's appearance, such as clothing, accessories, tattoos or even piercings. By recognising these, we would have been able to generate more tailored descriptions for one of our alternative modes of installation for the person interacting with the installation. However, as the software required for this was only published shortly after the creation of our artwork, we were not able to use it for this purpose.
Furthermore I consider the ***transparency of the computer vision systems*** we worked with, alongside the first topic, to be one of the most limiting aspects of our project. While the open-source Haar Cascade algorithms were essential to make the project possible in the first place, only the internal logic and applied code are publicly available, not the training datasets. Consequently, the system is partly a black box for us. For instance, the training data used for facial recognition cannot be viewed, which makes it very difficult to analyse biases such as representation biases. In the case of OpenCV's face detection algorithms, we are utilising them in our project, which is why it is of high importance for us to deal with potential biases in order not to implement any in our artwork and thus reinforce existing discriminatory processes. However, this lack of transparency in training data means that our hands are partially tied here. To at least somewhat counteract this, we tested the face detection with people of different skin colours, but only to a very limited extent. Here, detection was always possible with a corresponding lighting situation. Nevertheless, this part of our artwork forms a large blind spot, whereby our artwork and its inclusivity is limited.
The third topic, our ***limited technical knowledge***, arises from the fact that Miguel Rangil and I both certainly have basic knowledge from our studies in Interface Cultures, but no professional background in IT or AI. This basic prerequisite gave us a good insight into how the OpenCV systems work; however, we do not have the same in-depth and well-founded understanding of these systems as people with this type of education or knowledge background. Consequently, despite our efforts, our artistic approach is not comparable to that of a technically trained person. In my opinion, it is precisely our artistic and politically-tribed engagement with the topic that is special and important in this project, but nevertheless, this limitation also results in a constraint on the criticism that we can express of the given systems.
In addition, our limited technical knowledge meant that we were unable to train our own recognition software to detect details on people, as needed for one of the alternative modes we created. However, the time frame of the project as well as the large scale of such a venture were other limiting factors.
Nevertheless, I personally find it difficult to judge how great this limitation really is without having a comparison. Especially because the occasional collaboration with Behiye Erdemir and Janik Möller on technical problems that we were unable to solve or questions of understanding gave us many opportunities for our project in this respect.
The fourth and final topic of this chapter deals with our ***privileged perspectives*** and how this has a limiting influence on the inclusivity of our project. As men-

tioned again and again, co-operation between different disadvantaged groups is always of great importance when working on non-discriminatory solutions. In our work, however, perspectives such as those of BIPOC individuals and people with disabilities are not included through joint practical work. We ourselves benefit from whiteness and are both able-bodied, whereby the project emerged from a clearly privileged position and perspective. However, we were able to counteract this, at least in part, through joint discussions and by opening up the possibility of a joint approach to the project through our workshop.

3.1.7 Exhibitions & Audience Experience

University of Luxembourg 2023

The opportunity to exhibit our project as part of the group exhibition "Quantified Perspectives: Re-thinking Data Narratives" was given to us by the University of Luxembourg in the form of a cooperation and was also held on their premises. For this, we were provided with space in one of the university's research laboratories, which we were able to partially remodel for these purposes. The group exhibition took place on a relatively small scale with a handful of artists and exhibits, which allowed for a very personal setting, even with the university employees responsible for us. The exhibition took place over a period of several weeks and was primarily intended for students and other members of the university. Thereby, the background of the cooperation and the reason for its initiation were the promotion of an exchange between technically based degree programmes and artistic-technical degree programmes like ours. In this context, the main aim was to open up an artistic perspective on technical and social circumstances, which is often lacking in purely scientific study programmes.

As part of this cooperation, a scientific poster was to be created by artists in addition to the exhibit in order to inform visitors about the background and research of the projects. This scientific poster, created by Miguel Rangil and myself, was placed next to the installation set-up and is shown on the following page (Figure 21.).

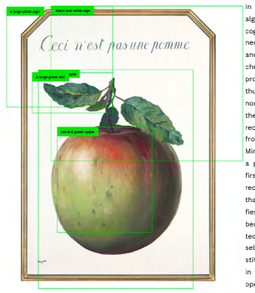
Unlearning Gender

Questioning the binary System of Gender 2023 - University of Luxembourg

Symbolic Hacking through CV-Algorithms

Gender & CV Recognition Systems

The binary gender system is perceived by some as providing stability and security, but for others, it leads to coercion and restricts their ability to perceive, make decisions, and have choices. Gender roles, identity, and order are constructs derived from the belief in distinct anatomical differences. However, biological facts challenge this notion, as sex is a continuum rather than a simple polarity. The invention of these differences historically emerged as a defense against women's quest for emancipation, serving as a tool of repression. This differentiation of individuals based on gender fixes differences and implies value judgments. Consequently, the social construct of the binary gender system functions as a form of structural violence, known as gender dichotomy, which is exploited by states as a means to establish order and exert power. Socially produced through humanities and social science, political and philosophical discourses, gender is socially constructed and maintained through powerful social norms.



In recognising reality, the algorithms of cv image recognition systems are trained on millions of images and reinforce image clichés, repeating patterns prone to standardisation; thus, when confronted with non-normative schemes, they are unable to correctly categorise people in front of the machine-eye. Minority groups are left in a position of vulnerability, firstly because they are not recognised before a system that identifies and classifies humans, and secondly because they are prevented from inserting themselves into the circuits, institutions or organisations in which these algorithms operate. Where is the supposed neutrality of these technological systems in their operation? Artist Trevor Paglen and scientist Kate Crawford analyse the epistemic limits of these models, showing how in their conception they are already affected by a very specific ideology. Turkers that train ImageNet, predictive policing models such as PredPol that prioritise surveillance in neighbourhoods with more immigration or computer vision models to recognise people's sexual orientation through physiology are examples that show how these tools do not obey a technical neutrality but rather a construction of knowledge based on a specific worldview. This techno-scientific paradigm annuls any gradient of subjectivity from these predictive technologies. Through its presence and action in spaces where a multitude of people fluctuate, it reveals to us the existence of inequality in the processing and analysis of data, of a biased programming with a colonial, racist, classist, homophobic, sexist and transphobic perspective that perpetuates the identical and the normative, of a non-neutrality. It reveals to us how the normalisation or standardisation of subjectivities through images is at work in our lives. Techno-capitalist ideology is embodied in the image through its processing, its categorisation, its mere existence.

How can this aesthetic of the neutral inserted in the computer vision be dismantled?

How can we, from digital art practices, dissolve this structural violence embedded in the technologies that recognise us?

To address this problem, our research has taken as a reference the strategies proposed in Exit Gender (Hornscheidt and Oppenländer, 2019). The book sets out the necessary coordinates for triggering mechanisms to dissolve the social system of gender without ignoring its structural violence. Since political identities presuppose gender and in this term accept a framework that includes structural violence, Exit Gender leaves gender as identity aside. Instead, it operates from a point of view in which no gender category or gender identity is given and asks what role gender plays in one's own identity, what dimensions of violence are internalised and become one's own normality and how gender ideas that are at the same time violent are normalised.

What kind of symbolic-poetic strategies, taking as a reference the action methodologies proposed in Exit Gender (2019), can we develop from a tool such as computer vision?

Exit Gender offers us the strategy of exgendering: describing gender-neutral actions, not revisiting gender images and abandoning gender attributions. With this method, people can be exgendered through perception, reading and language. It is important to mention that this action renounces genderism, without ignoring it.

Our Project

The vision machines deployed in our contemporaneity encapsulate, labels and categorises bodies through words. Machine vision classifies bodies that fit into a binary worldview of gender, and those subjectivities that are not able to conform become invisible to its schemas.

Which bodies are being recognised and which are not being recognised from algorithmic eyes?

In Unlearning Gender (2023) we have worked directly with VC tools by hacking the interface. CV image recognition systems have a series of very recognisable visual elements: bounding boxes that encapsulate the object or person, labeling in the top right corner of each bounding box, the nuclear green colour of the bounding box, the confidence percentages with respect to what is recognised. These are elements that define the aesthetics of computer vision tools.

Unlearning Gender is a project that speculates on alternative modes of categorisation as a strategy of resistance to algorithmic-binary normalization. Through the symbolic hacking of the computer vision interface, the project aims to escape the construct of gender and break with the technosocial binarisms embedded in technology. With this algorithmic essay we have developed small micro-actions that disrupt this characteristic and defined visuality. By appropriating the aesthetics of computer vision and, in a symbolic exercise through playing with the aesthetics of its interface, hacking it's initial purpose we refunctionalize computer vision techniques for purposes. In his article "Invisible Images" Trevor Paglen (2019) states „machine vision systems are extremely intimate instruments of power that operate through an aesthetic and an ideology of objectivity, but whose categories are designed to reify certain power relations". In this sense, the presence of algorithmic vision systems generates a context that promotes a hyper-ideology due to their apparent impartiality and fairness. We reuse this aesthetics associated with neutrality by dismantling them and recontextualizing them.

How it works

Our approach to the tool is not through a retraining of the models or algorithms used by the system, but through a poetic alteration of the visualisation. We began the work process by investigating the main pre-existing haarcascade models, and we realised that most of them fall into discriminatory logics based on the recognition of gender, age, or emotions, among others. Because of this, we decided to modify pre-existing haarcascades to adapt them to our proposal of a non-categorisation. Algorithms that recognise the whole body or the face of a person were used in the modifications we proposed. We dropped the binary recognition from the model, deleted the labelling and the percentage of certainty and started to play with the interface in a symbolic way. So, using Python, OpenCv, and pre-existing haarcascades we proposed two initial alternative categorisations to start with:

Infinite description:
In contrast to the sharp, delimit- descriptions that are positioned in the upper left-hand corner of the bounding box and aim to define what is recognised, with the infinite description we seek to generate a categorisation that unfolds on the recognised face and scribes, in a poetic way, algorithm sees. A text, which is written little by little on the surface of the face, describes through metaphors, in a completely ambiguous way, without falling into biased descriptions, the person in front of it.

Fluid categorization: In opposition to those modes of recognition that recognise only one entity, encapsulate it and discriminate it from its context, with this mode of recognition what we propose is a categorisation that completely fills the recognised and interrelates it. It is not a specific categorisation, but a kind of fluid categorisation that constantly recognises and fails to recognise.

From the design of these modes of recognition we created an installation set-up based on three vertically tilted screens that work as digital mirrors. The spectator stands in front of the three screens and by means of three webcams positioned on the screens they recognise the spectator.

Interaction

In order to introduce our alternative categorisations in a facility we consider it relevant to develop a specific behaviour:

The user approaches the facility and the program detects and categorises them using a gender-based recognition model (CV GENDER), which distinguishes between male and female.
If the user continues to be detected, the programme applies CV GENDER for 5 to 10 seconds and then applies the three alternative categories (CV GENDER-LESS).
If the user continues or does not continue in the facility, the program reverts to CV GENDER behaviour and starts the loop again.

Workshop

Given the open and collaborative nature of our project, we are expanding our research through a workshop format. The two main objectives of this workshop are to teach the practise of exgendering and naming genderism as well as to show the tools, at user level, to be able to elaborate taxonomies and categorisations of computer vision.

How could we adress the intimate topic of gender and open up a safe space for disscusion?

The workshop will be structured in two main parts: a theoretical section to introduce the contents we are dealing with (gender and identity, technology and biases, artificial intelligence and marginalisation of alternative subjectivities); and a practical section where the participants are introduced to the use of CV tools and to elaborate their own models in order to later, as a final result, elaborate a collective work that brings together all the proposals of the workshop members. This workshop will be taking place during the Ars Electronica Festival 2023.

About us

Miguel Rangil is a transmedia artist who focuses both his research and artistic production on new contemporary strategies to address a critical exploration of artificial intelligence and the consequences of its operationalisation in various spheres of human experience.

Jelena Mönch is a media artist who specializes in creating visually generative artworks that prioritize real-time interaction. Her work explores a range of themes, including digital artificial life, psychological disorders, and social constructs and phenomena.

Miguel Rangil Jelena Mönch

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Paglen, T. (2019), Invisible Images: Your Pictures Are Looking at You. Archit. Design, 89: 22-27. https://doi.org/10.1002/ad.2383

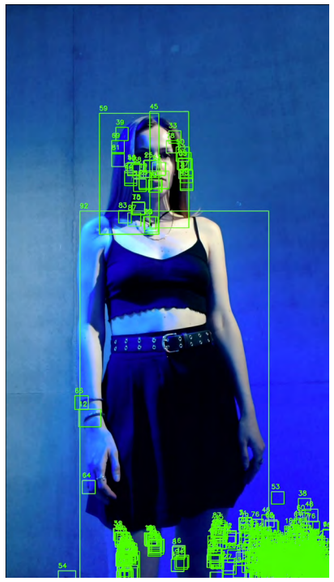
Miguel Rangil & Jelena Mönch

Quantified Perspectives: Rethinking Data Narratives

Figure 21.
Scientific poster of the exhibition "Quantified Perspectives: Re-thinking Data Narratives".

The Exhibit

Our project's installation, though not without hardware-related problems (covered in "Development and Adjustments in exhibition Context"), still proved to be successful. The following pictures show the setup of the installation and the modes of interaction.



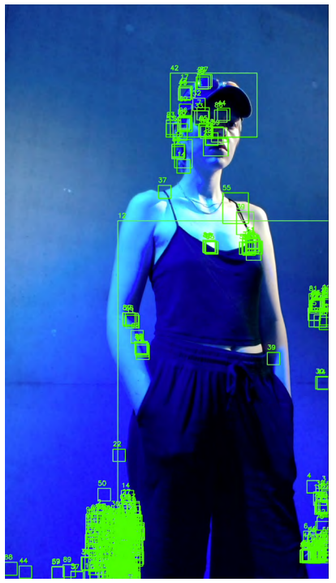


Figure 22. - 25.
Person interacting with the Unlearning Gender installation at the exhibition "Quantified Perspectives: Re-thinking Data Narratives".

Thus, the opening of the exhibition shown below, at which we also briefly introduced our project to visitors, was also a success and Miguel Rangil and I were able to engage in dialogue with visitors by accompanying it. As expected, many of the participants had a more technical background and their questions were often related to the functionality of our installation rather than the artistic aspect. Nevertheless, there was a great deal of interest in an exchange and our political and artistic approach was received positively.

Figure 26.
Introduction of the project Unlearning Gender during the opening of the exhibition "Quantified Perspectives: Re-thinking Data Narratives".

In addition, the topic of gender and with this the questioning of the binary gender system seemed to be entirely new for many, which meant that our project appeared to provide a new perspective for many visitors.

The Presentation

In addition to the exhibition, we presented our research and project development to the university faculty and the university management, which is shown below. Here, too, we received feedback that the approach of questioning the binary gender system was still new to many. Nevertheless, our project and the findings behind it were received positively.

Figure 27.
Presentation of the project Unlearning Gender to the university faculty and the university management of Luxembourg.

To summarise, the exhibition was a success for us despite the difficulties and our project seemed to have clearly fulfilled the aim of the cooperation we intended. Our goals of drawing attention to the emphasis of gender discriminatory norms and prejudices through computer vision also seemed to have been achieved in the scope of the exhibition, which was a very positive experience for us in the context of the first public presentation of the project.

Ars Electronica Festival 2023

The Exhibit

Our second exhibition opportunity was the aforementioned group exhibition "Resonating Selves", which took place as part of the Ars Electronica Festival 2023. Here we further adapted the set-up of the installation, as explained in the chapter "Development and Adjustments in exhibition Context". The festival, and therefore also the exhibition, took place over a period of one week and attracted a large number of international visitors.

We supervised our installation during this period and thus engaged in interesting conversations with many visitors. In this exhibition context, the criticism of the binary gender system seemed to be less new for many visitors, although the implemented concept of exgendering was still new territory for many. Here, too, we received positive feedback and answered interested questions from visitors about our approach and the technical and political background to our installation. Moreover there was also a lot of interest in our workshop, which unfortunately took place in the morning of the first day of the festival, which sadly meant we had to disappoint these visitors.
When observing visitors interacting with our exhibition, we noticed that the majority of them were very interested in the interaction. To our surprise, this engagement often consisted of using the exhibit as a virtual mirror for taking photos and videos of the augmented version of themselves and even gathering friends for group photos. Another frequent form of interaction we observed was the testing of the AGR-system by visitors, which I will discuss in more detail in the following chapter. Furthermore, the interest of visitors in the functioning of the AGR-system was expressed through questions to us, particularly about why it sometimes switched gender labels, seemingly causing discomfort. Regarding this reaction, it is a suspicion of mine that the combination of misgendering and the concept that gender could be ambiguous was not seen too favourably by some visitors. Also, the more frequent display of the label "male" as opposed to "female" was noticed by many visitors and was not welcomed.

Our Workshop

In addition to the exhibition of the installation, we had the opportunity to realise our planned workshop as part of the public lecture series "Feminist AI" in cooperation with the FIFITU% Network for Women* in Art and Culture in Upper

Figure 28.
Unlearning Gender installation at the exhibition "Resonating Selves" as part of the Ars Electronica Festival 2023.

Austria. For hosting the workshop, we were provided with a spacious conference room at the university, which was rearranged according to our wishes. Given that festival visitors come from all possible backgrounds, we did not presuppose any technical knowledge for participation in the workshop and adapted some of our practical tasks accordingly, which is explained in more detail in the sub-chapter "The Workshop" of the chapter "Artwork Development". The contents and tasks of the workshop are also outlined in the mentioned chapter, which is why they are not presented here to the same extent. For further information, please find the presentation we created and used for the workshop in the appendix D.
As part of the workshop, we presented the scientific and political background of our artwork, talked about gender, sex and identity, as well as the social construct of binary gender and its manifestation through technology, explained the "Exit Gender" action concept and introduced our installation. This involved practicing the presented content together through small practical exercises and engaging in dialogue.

Unfortunately, as already mentioned, the workshop took place in the morning on the first day of the festival, which is why we only had a limited number of participants, who nevertheless enabled a positive exchange with lively discussions and active participation. The first discussion of the workshop dealt with the question of how and through what institutions the system of binary gender is enforced in our society. Together, we collected examples such as the medical system, education systems and many more. Here, the majority of participants found this initial knowledge application task easy to fulfill and seemed to be able to grasp the content we presented well. Then, after presenting the "Exit Gender" concept together with a step by step guide on how to implement it, we did the first exercise together. This involved formulating a description of a chosen person in the group and using alternative categories and non-gendered perspectives to exercise the application of what they had previously learned. Three of these key point descriptions created by participants are presented on page 122 in figure 33.

Figure 29.
Unlearning Gender workshop at the Ars Electronica Festival 2023: Comparing results from exercise 1.

Figure 30.
Unlearning Gender workshop at the Ars Electronica Festival 2023: Comparing results from exercise 1.

Figure 31.
Unlearning Gender workshop at the Ars Electronica Festival 2023: Presentation (Computer Vision Aesthetics).

Figure 32.
Unlearning Gender workshop at the Ars Electronica Festival 2023: Group discussing.

When discussing and comparing the results together, it became apparent that one person had misunderstood the task. The rest of the group, however, found it understandable and gave feedback saying that they found it easy to implement.

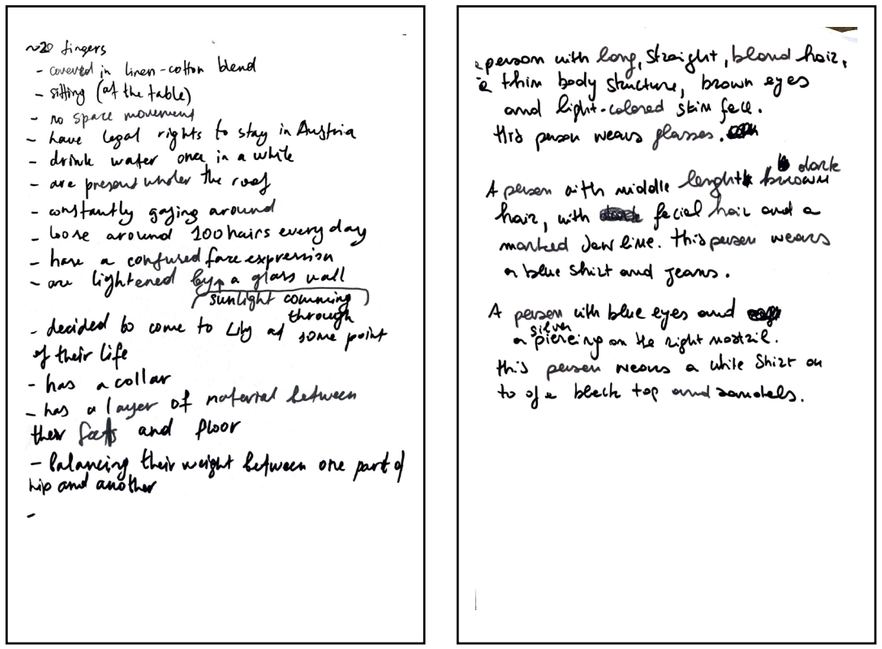


Figure 33.
Four key point descriptions created by workshop participants.

After giving an introduction to how technology reinforces existing forms of discrimination and what this looks like in the context of computer vision, we presented artworks dealing with these themes and explained our installation. This was followed by a task that involved collecting and sketching ideas of alternative categories potentially usable in the installation. Here, instead of working with code, the participants used pen and paper for ideation and conceptualization of these alternative computer vision systems to AGR-systems.

Figure 34.
Workshop participants sketching how alternative categorizations could look like.

Throughout the workshop, different approaches emerged as to what such systems could look like. Several of the ideas for a system were based on avoiding computer vision imposed labels and instead giving the person detected the

opportunity to choose their own. Thus, the imposition of categories should be avoided, as well as self-determination about the definition of one's own identity.

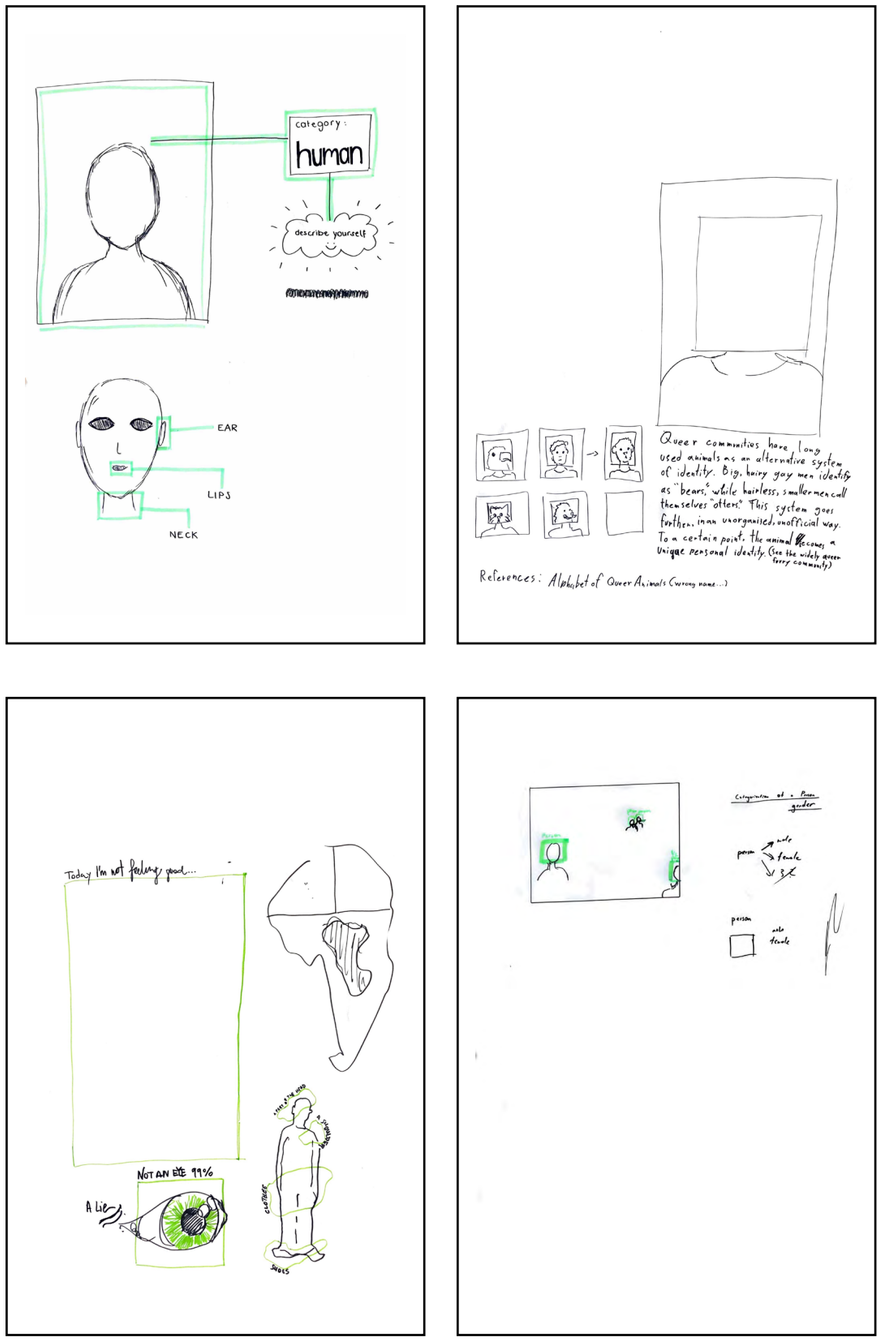


Figure 35.
Sketches of ideas for alternative categorizations by workshop participants.

Another approach that repeatedly emerged was to reduce the labels to less interpretative aspects of people, such as recognising body parts.
Other ideas explored the opposite direction and exaggerated the interpretation, such as recognising an animal in the detected person. In the following, sketches created by the participants are presented that follow these described approaches.

The participants' feedback on our workshop was positive and we had the impression that our goals of facilitating an exchange, gaining insight into other perspectives on the topic and encouraging a critical questioning of gender norms and their importance in our society were achieved.

Public Lecture

In the context of the public lecture series "Feminist AI", held in cooperation with the FIFITU% Network for Women* in Art and Culture in Upper Austria and the Ars Electronica Festival 2023, we held a public talk where we presented our research and workshop results. Elena Nox, a well-known media and performance artist based in Tokyo, opened the lecture and we followed with our presentation and a discussion. This talk, moderated by Oona Valarie Serbest and Manuela Naveau, was the first of the lecture series and thus opened the series. (DORF TV GmbH, 2023)

Figure 36.
Public talk about research and workshop results at the Ars Electronica Festival 2023..

In this talk, we presented the theoretical background of our work, including the social construct of binary gender, the concept of "Exit Gender" and technology as manifestation. This was followed by a presentation of our proposal, i.e. our artwork, as well as the workshop and its results. Afterward, we invited a round of discussion and gave the audience the opportunity to ask us questions.

The panel discussion was very engaging, and the audience included many people with technical and feminist backgrounds, which allowed for an intense dialogue and exchange of ideas. A comment from one of the participants remained in my mind, which said that it is a decision taken by the developers to only show two labels and no inbetween, as algorithms would show all the grey shades as well if we would let them. This person was referring to the functioning of categorization algorithms, which, in their basic conception, express a certainty of the result through percentages and therefore do not give a clear yes/no answer.

For further insights, please click or scan the following QR-Code, where our talk starts at minute 1:13:43, or look at appendix E for the presentation document.

3.1.8 Gender Performance & AGR-Systems

In the following chapter, I talk about my experience with the categorization of AGR-systems, describe my observations of the interaction between the system and visitors and present my theory of conclusions about the functioning of it based on these observations. Curiosity and playing with the system opened up new perspectives to me on the perception of computer vision systems of gender. In the course of this, I further explored the key question of how computer vision reproduces and manifests the social construct of binary gender, which I explain as follows.

My personal Experience

Through our implementation of the OpenCV AGR-system in our software for the installation, I also got to grips with how the software perceived me. When I first allowed the system to categorise me, I quickly realised that it seemed to have difficulty classifying me. It kept switching between the labels "male" and "female" in an attempt to categorise me. Even when holding a position, it seemed uncertain. By comparing how the system reacted, for instance, to Miguel Rangil, namely with the almost continuous labelling as "male", this appeared to be a peculiarity rather than a simple "non-functioning" of the system. Miguel Rangil corresponds more to the stereotypical performativity of a "man", which led me to assume a connection between his appearance and his categorization by the system. Therefore, the first explanation for this behaviour of the system that came to mind was my appearance and performance, which was often described as androgynous.

Is it possible that this system had trouble categorising me simply because I didn't fit the stereotypical image of femininity or masculinity?

With my short hair, my above-average height and my style of dress, the system seemed puzzled. I saw this as an opportunity for testing the system to determine which factors could be decisive for which classification. Therefore, I began to test how the system reacted to me depending on how I dressed and behaved.
During these tests, I experimented a lot: I varied my clothing, my posture, how I positioned my head, my facial expression and saw how the system reacted to these changes. In doing so, I recorded myself in order to document the results and to be more easily able to understand them afterwards. These self-made observations are summarised in the following online gallery. Please click or scan the following QR-Code for mor insights.

After a few attempts, I realised that, at least in my case, clothing did not seem to play such an important role, with the exception of a cap. When wearing a cap, the system seemed to read me as "male" and categorised me as "female" in the same situation without it.
What also seemed to have a greater influence on the labelling was the positio-

Figure 37.
Four screenshots of self-made observations.

ning of my body. So I discovered that a broad, space-occupying posture often led to me being labelled as "male", whereas a tilted head was more often labelled as "female". Additionally, the tilt of my head downward and upward and the way I looked at the camera also appeared to have an influence. If I placed my chin on my chest and looked up into the camera, I suddenly became "female"; if I tilted my head further back and looked at the camera from above, the system showed me labelled as "male". Moreover, I was also labelled "female" when I bent my knees and thus reduced my height, which seemed to confirm expectations. The results were particularly clear when I combined several of the aspects mentioned. For instance, tilting the head and smiling at the same time. In the case of my categorization, the decisive factor for how I was categorised seemed to be whether I smiled or not. Almost consistently, a smile led to a "female" label, while a neutral or non-smiling expression resulted in "male".

While these limited tests were with only myself and therefore cannot draw definitive conclusions about the system's overall functionality in its categorization, they did, in my opinion, suggest emerging tendencies, which I followed up with further tests involving other individuals.

Hidden Observations

In order to gain an insight into how the AGR-system categorises other people, I analysed interactions between visitors and our exhibit as part of the exhibition at the Ars Electronica Festival 2023. In this analysis, with a few exceptions in order to document, I used the quantitative research method of hidden observation so as not to influence visitors in their interaction with the system. In these observations, I noted that many visitors appeared to be testing the system according to the categorization's exclusion points. Some made faces, looked alternately angry and cheerful and moved around. Someone even tried to challenge the system with photos of Conchita Wurst, a well-known drag performer who combines a beard and make-up in a way that confuses gender stereotypes. This behaviour enabled me to interpret the reaction of the system to various characteristics.

In the following, I begin by presenting the outwardly changeable characteristics that tend to influence an interpretation of the system in the direction of "female". As in my own self observation, I observed that visitors were labeled as "female" when they smiled. Wearing make-up was also found to be an influencing factor, as was wearing dresses or skirts. In addition, wearing long hair loose was a decisive factor. Body language too seemed to be a major factor here, as visitors looking up from below, tilting their heads to one side, or looking downward were also more likely to be perceived as "female". Height also seemed to have the expected influence; people with a small height were very often categorised as "female" by the system.

In contrast, the appearance or performance, which was often interpreted as "masculine", was characterised by the wearing of caps, an angry or neutral facial expression and a space-consuming posture.

A more general observation I noticed was that the system seemed to interpret visitors as "male" more often than "female".

Theory & Conclusion

Based on these observations, I suspect that the tested AGR-system from OpenCV does not, as often assumed by analysts, refer predominantly to the physical characteristics of a person for their categorization but relies much more heavily on their gender performance for their categorization.

*Could it be that AGR-systems operate a categorization **primarily** on gender performance and stereotypical gender images?*

In this context, I suggest gender performance is taken up by the system in various forms. For instance, wearing skirts and dresses, make-up and having long hair, i.e. external gender stereotypical expressions of femininity, are interpreted by the system as an indication of the category "female" and thus correspond to the logic of gender prejudices. Smiling, tilting the head to one side, which is often interpreted as a friendly and approachable gesture, looking up from down and gazing at the ground, are also gender stereotypical behaviours expected of people socialised as female. Similarly, a smaller height is often perceived in our society as a stereotypical female physical attribute, which in turn is also perceived by the system as "female".

On the other hand, according to my observations, the system also categorises gender-stereotypical behaviour expected of people who have been socialised as male, such as an aggressive, angry facial expression, not smiling and a broad posture, as "male" in line with these prejudices.

The fact that only height as a physical attribute that is not easily changeable

appears to be included in the decision-making of the system and the fact that other influencing attributes are changeable also speaks in favour of a categorization primarily based on gender performance.

Furthermore, findings from the tested AGR-system reinforce Judith Butler's theory of gender performance and thus the concept of "doing gender" as explained in the chapter "Construction & Production of Gender". After all, even in the digital eye of computer vision, a visitor's gender performance appears to be decisive for classifying them within a binary gender system.These findings also answer the previously posed question concerning how computer vision reproduces and manifests the social construct of gender. Because with regard to the system under investigation, it seems to recognise various gender stereotypes in the form of gender performance and reproduce and manifest them through its categorization. Accordingly, the ability to influence the result of the categorization through behaviour, body language and clothing could reflect the social construction of binary gender.

3.1.9 Summary & Findings

To summarise, I would describe the project "Unlearning Gender" created by Miguel Rangil and myself as a success, as we have achieved the goals we set ourselves at the beginning. We deconstructed binary gender and questioned it by realising the installation, and although the alternative categories have limitations, they do justice to this objective. In this respect, I consider the exemplary exgendering created by the computer vision system, together with the questioning of the comprehension capacity of the bounding boxes through the two alternative modes we have developed, to be a successful realisation.

In terms of the external impact of our project, many opportunities have unexpectedly opened up for us to engage with people, which, in my view has also led to its success. Presentations as well as conducting the workshop formed an important additional part of exhibiting the installation and enabled a direct exchange of ideas with participants. Of course, the visitors' interaction with the exhibit and our interaction with them also played a major role in providing impulses for reflection.
Through our project we opened up discussions, engaged in many conversations, held speeches and educated people, thereby bringing about change, albeit on a small scale. This impact described above is in my opinion, an active step towards the deconstruction of the gender binary. Therefore, I consider our project to be an answer to the question of how gender can be deconstructed through the (re)use of this technology in artistic practices. Clearly, our project is just one answer among many, as I will demonstrate in the next chapter by presenting other artistic approaches to this theme.

Moreover, our artistic work has led me to gain personal insights through my practical engagement with the AGR-system, which opens up a different perspective on its functioning. Although gender performance is included in the analyses of studies of the systems, as mentioned in the sub-chapter "Biases in Conception & Functionality" of the chapter "Automatic Gender Recognition Systems", the weighting of this was evaluated differently in these studies than is reflected in my observations. This is because these studies attribute physiological characteristics as the key factor for the categorization of these systems (Scheuerman et al., 2019, p.6), whereas my observations show that apart from people's height, these do not seem to play a decisive role. Therefore, based on my observations, I suggest that it is not physical factors that play a major role in so-called "gender detection", as is often assumed, but rather the gender performance of the person being classified.
Furthermore, existing research has only found a correlation between make-up as gender performance and the systems categorization (Scheuerman et al., 2019, p.6), whereas my investigation revealed a wide range of appearance and presentation in connection with the gender stereotypical categorization of the systems.

Both of these findings in turn confirm Judith Butler's thesis for the construction of gender through "doing gender" respectively, gender performance with regard to AGR-systems. To understand how binary gender is perceived as well as reproduced by ARG-systems, this suspicion represents an important further step. Therefore, it might provide a deeper understanding of how AGR-systems operate and further confirm the observation that the system picks up gender stereotypical markers. This also further affirms that AI-systems are not neutral, but a mirror of our society.

However, these findings still require further investigation and can only be applied to the OpenCV system used so far. Thus, in order to provide a generally

valid statement about AGR-systems, more such systems would have to be investigated and the research would have to take place within the framework of a scientific study in order to generate reliable results. Nevertheless, these results provide an important indication for future engagement with systems like this one and indicate a possible direction for further investigations.

3.2 Mediart-historical Contextualisation of Unlearning Gender & corresponding artistic practices in Comparison

3.2.1 Introduction

This chapter serves the mediart-historical contextualisation of the artwork "Unlearning Gender", as well as the analysis of other artistic approaches of deconstructing gender. In the following, a selection of artworks will be presented, providing an historical overview of gender, queerness, technology and specifically AI in media art and interactive media art. As part of the analysis and contextualisation of the artwork "Unlearning Gender", this selection of artworks and their artistic practices will be compared with it below. This also serves to answer the question of how binary gender could be deconstructed through the (re)use of this technology in artistic practices and thus to discover different artistic approaches in the context of gender and technology. Here, the guiding questions are: How could binary gender be questioned through art? How do other artists explore the intersections of technology such as computer vision with gender? What are the methods and artistic practices they use? And to what extent are these similar to the artistic approach of "Unlearning Gender" and how do they differ from it?

Beginning with the chapter "**Queer Technologies**" the artwork of the same name is presented and compared to "Unlearning Gender". Thereby "Queer Technologies" explores the relationship between sex, gender and technology, and is the earliest artwork of this analysis. Following the artwork "**Facial Weaponization Suit**", which is an intermedia art series including several masks, is introduced and contrasted with "Unlearning Gender". This work is devoted to various political sub-themes, all of which unite around the theme of criticising biometrical harmful representations. The subsequent chapter deals with "**[x]enoimage**", which is again compared to "Unlearning Gender" and like it, was co-created by Miguel Rangil. Here, the work is dedicated to breaking dominant visualities and explores perceptual phenomena in the context of computer vision systems. The next chapter "**See My Gender**" describes the artwork of the same name and contrasts it with "Unlearning Gender". In the form of a performance, "See My Gender" deals with the fallibility of AGR-systems and demonstrates this in a playful realisation. In the last chapter of this thesis section "**Summary & Findings**" the collected findings of the analysis of the artworks and their comparison with "Unlearning Gender" are presented.

3.2.2 Queer Technologies

(2008-2012), Series, Zach Blas

A plain, sterile room filled with neatly arranged technical products, two computers set up opposite each other and screens hanging on the walls is on view. Books titled "Gay Bombs - User's Manual" are neatly stacked in small towers on the floor. Designed down to the smallest detail, the colours magenta, white and black dominate the aesthetics of the objects, graphics on the screens and the wall text written in capital letters. In rich black the words "Queer Technologies" are written on the wall, overlapping the two metre-high letters "Q" and "T". Small pieces of hardware in pink and blue packaging and black and pink software boxes fill the wall shelves of the room, creating a mixture of department store aesthetic and gallery look. On the screens, a rotating 3D rendering of a bomb alternates with a pink, black and yellow swarm of "QT"s, which after a few seconds form the title "QT- Queer Technologies". (Blas, n.d.A)

Figure 38.
Exhibition of "Queer Technologies".

"Queer Technologies" is a group of works initiated by the artist Zach Blas in 2008 that examines the relationship between sex, gender and technology and explores it through artistic practice (Klipphahn-Karge et al., 2023, p.13). Until 2012, Zach Blas pursued this and created "Queer Technologies", an organisation that produces critical applications and tools for queer technological actions, interventions and sociality (Blas, n.d.A). His central idea for this artwork was to re-imagine technology for queer use and in doing so critiquing the heteronormative, capitalist, militarised foundations of technological architecture, design and functionality (Blas, n.d.A).

As he explains in an interview, while studying the history of electronic media, he came across the question of why plugs are labelled as male and female and, consequently, why plugs are connected through heterosexual intercourse (Sargent, 2016). These reflections, he states in this interview, were the origin of the idea of "Queer Technologies" (Sargent, 2016). He considers technological progress as rooted in heteronormative discourse and through his artwork opens up the perspective that technology is a powerful tool for queers to challenge heteronormativity and create alternative social realities (Queer Technologies Inc., 2008, p.17).
Thereby Zach Blas' presentation of "Queer Technologies" follows a commercial aesthetic: individual presentation areas with monitors and a series of carefully placed objects present the different sub-works like products in a tech shop (Klipphahn-Karge et al., 2023, p.13). Zach Blas explains the background to this commercial approach by saying that it follows the logic of how people encounter technology, namely as something consumable (Sargent, 2016).
These "products" include the "Gay Bombs", the "ENgendering Gender Changers“ and the „transCoder" (Blas, n.d.A). The "Gay Bombs" is a manifesto in the form of a technical manual that outlines how to realise queer networked activism, the "ENgendering Gender Changers" acts as a "solution" to the male-female binary of plugs and corresponding adapters and the "transCoder" is a programming anti-language developed from a queer perspective (Blas, n.d.A). However, as these works are very complex, they will be explained in detail below. In the context of the exhibition, these "products" are presented and deployed at the "Disingenuous Bar" (Blas, n.d.A), the concept, aims and background of which are also explained below.

Gay Bombs

(2008), Part of the Series, Zach Blas

"Gay Bombs", the centrepiece of the group of works that brings the individual products together conceptually, consists of two parts. The first is a video installation that reproduces the image of a 3D rendering of a bright pink grenade whose detonator is labelled with the abbreviation "QT" for "Queer Technologies" (Klipphahn-Karge et al., 2023, p.15). The second part is a comprehensive handbook-manifesto that explains queerness as a tactic of disruption of consumption and heteronormativity (Klipphahn-Karge et al., 2023, p.15).

Figure 38.
Exhibition of "Queer Technologies".

The title of this work refers to the myth of the "Gay Bomb", a research programme initiated by the US military in 1994 and discontinued in 2005, the aim of which was to develop an aphrodisiac chemical weapon that would turn opponents homosexual (Klipphahn-Karge et al., 2023, pp.15-16). In the logic of the US military at the time, this was intended to defeat the opposing war party, as they would give up in shame over same-sex desires (Klipphahn-Karge et al., 2023, p.16). Another reference to the name, which is also emphasised by the cover image of the manifesto, is a bomb actually sent to Afghanistan in 2003, which was labelled "High jack this Fags" by marines thus revealing a homophobic background to the military operation (Klipphahn-Karge et al., 2023, p.16). Subsequently, these historical events are represented by the bomb as a symbol of orientalism, anti-muslim racism and homophobia (Klipphahn-Karge et al., 2023, p.16). Above all, however, the clear representation of a larger societal

threat to queerness through the bomb was used by Zach Blas, according to his own statement, to create this queer manifesto (Sargent, 2016).
Here, Zach Blas understands the manifesto as a hacked concept of this terrorist paranoia and warfare (Blas, n.d.B). The Queer Bomb thus takes fundamental tactical understandings of action, community, resistance and strategy and, through queering, recontextualises them with a new purpose. In this sense, the manifesto describes in the style of a handbook how queer political action can be achieved through the understanding, use and distribution of queer technologies (Blas, n.d.B). "Gay Bombs" is therefore a technical manual that aims to explain and shape the discourse on queer technologies (Blas & Cárdenas, 2013, p.561), thus bringing structure and cohesion to the group of works.
In the Manifesto, but also in the broader context of the group of works, technology is understood as open and partly indeterminate, which leads to a recurring potential that, through appropriate use, can also contradict its originally coherent ideas (Klipphahn-Karge et al., 2023, p.17). Thus, despite its heteronormative origin, technology becomes a means of destroying the norm established by and within technology by queering it (Klipphahn-Karge et al., 2023, pp.15-17).

ENgendering Gender Changers

(2008), Part of the Series, Zach Blas

This project of the work group addresses the aforementioned question of why plugs are labelled male or female by offering the possibility to convert them outside of the binary using an adapter. The solution to the problem of binary gender constructions is thus the fluid switching between gender identities made possible by the adapter. In this way, the potential for reinterpretation of the technology described was utilised by developing techniques for active queering rather than by queering existing technologies. Through this it questions and critiques the naturalising views of binary gender that are manifested and reproduced in technical artefacts such as in the example discussed of binary gendered plugs. (Klipphahn-Karge et al., 2023, p.14)

This has resulted in the creation of a wider range of gender adapters, such as the Female DB25 to Power Bottom DB25 adapter, which can be connected to a male serial cable. Once connected, the adapter takes control of the signal and redirects the power according to the pin configuration, which Zach Blas believes is a perfect solution for surreptitious data manipulation. (Blas & Cárdenas, 2013, p.561)

Following the commercial and consumerist logic of the group of works, the colourfully packaged adapters look as if they have just come out of a consumer electronics store (Klipphahn-Karge et al., 2023, p.14). The conventional consumer object of the adapter is thereby recontextualised through its queer political function, questioning the connection between gender, identity and hardware connectivity (Klipphahn-Karge et al., 2023, p.14). It is important to note that these adapters were not only exhibited in a purely artistic context, but were also mass-produced and secretly distributed in Radioshacks, Best Buys, Circuit Cities and other consumer electronics stores (Blas, n.d.C). Through this, the work was able to meet the public as a product and not just as an art object, thus achieving a different form of interaction, as for a product poses different questions to the buyer in terms of functionality, compatibility and affordability (Blas, n.d.C).

Figure 39.
The "Gay Bombs, User's Manual".

transCoder

(2008), Part of the Series, Zach Blas

Another part of the group of works is "transCoder", a programming language and software development kit created from a queer perspective (Sargent, 2016), which provides an open source environment for the collaborative development and creation through coding (Blas & Cárdenas, 2013, p.564). The name of the project alludes to transgender and Lev Manovich's fifth principle of new media, in which transcoding is defined as translation into another format (Blas, n.d.D). In this context, Manovich identifies a cultural level and a computer level

that influence each other (Blas, n.d.D). Following these definitions, Zach Blas describes "transCoder" as a programming language that transcodes between these two layers (Blas, n.d.D). In this respect, a central aim of creating this language is to break the cycle between heteronormative culture, coding and visual interface (Blas, n.d.D).

Again, the hetero norm implemented in standard programming languages is exposed by replacing it with queerness (Sargent, 2016), thus illustrating the "cultural level" of programming languages. Thereby, old queer slang languages like Polari and queer sexual practices were used for realising this replacement (Sargent, 2016). Examples of this include programming language functions such as "finger()", which stimulates data, "qTime()", which enables the execution of a programme outside conventional computing histories, and "iDo()", which causes computers to self-destruct (Sargent, 2016). Here, the function "finger()" for instance can be understood as a play on the term "penetration test" used in computer science. The libraries included in "transCoder" also reflect ideological holdings and queerness through the use of names such as "Cyborgian Non-Essentialist Posthumanism"," Fisting as Friendship" or "VNSMatrixised GenderCode Fuck“ (Sargent, 2016). Here, the political neutrality of programming language is clearly rejected in order to illustrate the absurdity of the normalising conservative gender dynamics in programming language through caricatural exaggeration.

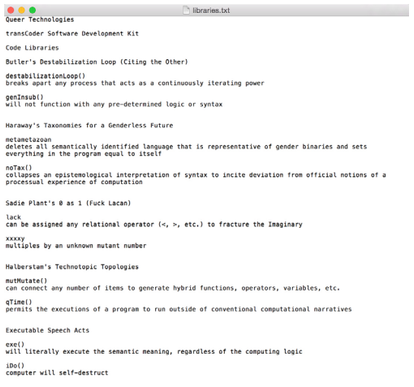


Figure 41.
The "transCoder".

Disingenuous Bar

(2008), Part of the Series, Zach Blas

The "Disingenuous Bar" is a clear reference and attack on Apple’ s Genius Bar (Blas, n.d.A), which performs comparable functions. Here, live demonstrations and produced video tutorials are shown (Blas, n.d.A) to provide an easy introduction to the logic and functionality of the exhibited "products" (Sargent, 2016), creating a performative space (Blas & Cárdenas, 2013, p.56q). Tnis was intended to answer visitors' questions, such as how to use the "products", thus creating an unusual form of interaction with an artwork (Sargent, 2016). However, it was not aimed to provide technical assistance, but rather political support for technical problems (Blas, n.d.E). Rather, the goal was to create a space for the investigation, discussion and dissemination of various queer technologies for political research (Blas, n.d.E).

Queer Technologies & Unlearning Gender in Comparison

"Queer Technologies" is one of the earliest artworks on the theme of questioning the neutrality of technology in relation to heteronormativity, and represents the oldest work in the context of this analysis. Although we did not draw inspiration from it for our artistic work "Unlearning Gender", this group of works did provide us with a reference for what an alternative artistic practice for deconstructing heteronormativity in technology might look like, which is why we included it in several of our project presentations, when explaining our project. In addition, due to its comparatively early creation, this work certainly had an influence on the subsequent historical development and discussion of digital interactive media artworks on this topic. Furthermore, for me this artwork was and is important for contextualising "Unlearning Gender" in that it has many similar starting points and a similar artistic approach, yet is fundamentally different in its realisation.

Perhaps the most significant aspect that "Queer Technologies" and "Unlearning Gender" have in common is the ***appropriation and (re)utilisation of technology for their own political purposes***. In both artistic approaches, technology is understood as open as well as malleable and used accordingly. Thereby both projects recognise the possibility of going against the intentions of the creators of the technology by alienating it from its intended use and also implement this in their artistic approaches. This is achieved in both projects through adaptation, reinvention and concrete transformation or hacking. In addition, both works reinterpret the criticised technology; in "Queer Technologies" through queering; in "Unlearning Gender" through a new contextualisation.

Another common feature of the artworks is the ***depiction of the social heteronormative influences on technology*** and thus the questioning of the neutrality of technology. In this context, "Queer Technolgies" is also dedicated to the topic of the construction of binary gender in and through technology, as represented by the artwork "ENgendering Gender Changers".
Another similarity is the ***creation of technical solutions to the ideological problems of technology***, where in both examples this approach is the means of their artistic realisation to question norms. From adapters that enable gender fluidity to performative education in the "Disingenuous Bar“,"Queer Technologies" offers a wide range of technical solutions to overcome the heteronormativity of standardised technology. Similarly, "Unlearning Gender" offers a solution to the ideological problem of AGR-systems through the technical implementation of an exgendering computer vision mode.

Another common feature of the works, which is not immediately apparent, is their ***use of the standard aesthetics used in the areas to be criticised***. For example, "Queer Technologies" uses a commercial aesthetic reminiscent of the display of goods in technology shops to critique technology as we know it, and "Unlearning Gender" adopts the computer vision aesthetic of neon green bounding boxes to critique precisely that. Here, both artworks visually adapt accordingly, continuing to follow the logic of (re)use for their own political purposes. For both artworks this adaptation can almost be described as an attempt to deceive, although it thrives on the dynamics of the aha effect.

However, "Unlearning Gender" and "Queer Techhnologies" also differ in many ways, namely in their basic ***form***. Thereby "Queer Technologies" is a collection of sub-works, whereas "Unlearning Gender" is a single work. Furthermore, "Queer Technologies" is a space installation and "Unlearning Gender" is an interactive video installation. Thereby, although they are both installations, "Queer Technologies" is a collection of works exhibited in a room, whereas "Unlearning Gender" is a single interactive installation.

They also show differences in their ***use of media***. "Queer Technologies", for instance includes an interactive performance, software and hardware solutions, printed matter such as books, and screens showing pre-recorded videos. "Unlearning Gender", on the other hand, also uses screens, but with live-generated video content and, unlike "Queer Technologies", does not consist of printed media, performative elements or physical art objects.

In addition, although both artworks are interactive, they differ in their ***form of interactivity***. "Queer Technologies" offers visitors the opportunity to participate in a performance in the context of the "Disingenuous Bar" and presents physical art objects as "products" to be touched. The exhibition space thus offers a form of interaction similar to that found in technology shops, where the purchase of products is not included in the exhibition context, but is realised in the form of shopdrops. "Unlearning Gender", on the other hand, enables interaction with various computer vision systems through digitally augmented real-time renderings of camera images on screens. Here, interaction with the system takes place through the physical and performative presentation of the visitors, which can be altered by body movement, changes in facial expression and positioning in space.

Accordingly, the two artworks also generate different ***outputs***. While in "Queer Technologies" an exchange in the analogue world only offers the visitor's experience as an output, the interactive video installation "Unlearning Gender" also generates several life-generated videos.

Another difference is that the same overarching ***theme*** is addressed, but in different dimensions. "Queer Technologies" takes a holistic approach to technology and the heteronormativity it contains, while "Unlearning Gender" specifically thematises the binary gender construction in the context of computer vision. In the following, "Queer Technologies" deals with technology such as programming languages and hardware such as connectors, but not with computer vision systems and therefore also not with AGR-systems.

In addition, as already mentioned, the two artworks use different ***aesthetics***, even though they are based on the same intention. Thereby "Queer Technologies" follows a commercialised aesthetic of product design and "Unlearning Gender" takes up aesthetic elements of computer vision systems.

Another difference is the ***community aspect*** of the projects. For example, although the artworks of "Queer Technologies" are dedicated to the queer community and aimed at its empowerment, no practical community exchange was created in the framework of the artwork. "Unlearning Gender", on the other

hand, included a practical community component through the workshop created and run as part of the artwork.

In summary, a comparison of "Queer Technologies" and "Unlearning Gender" reveals their fundamentally different structures, media uses and forms of interaction. However, they share the same theme, namely the questioning of heteronormativity and its implementation in technology, although this is dealt with in different dimensions and technologies. Moreover, their artistic approaches are very similar, as both involve the appropriation of technology for their own political purposes and the creation of technical solutions to ideological problems of technology.

3.2.3 Facial Weaponization Suit

(2011-2014), Zach Blas

Illuminated by spotlights, four masks hang side by side on a white wall. The first is a shade of pink, the second a royal blue, the third a shade of black and the last a shiny silver colour. They all have the shine of high-gloss plastic and round, organic shapes, as if they were liquid or mouldable. Next to them hangs a large screen on which the pink mask morphs and flickers, followed by a person wearing it. Pink 3D scans of faces are layered on top of each other, morphing and bubbling into each other like an organic something until an unrecognisable mush of round ups and downs emerges, reminiscent of the mask. Next to the screen, four prints of studio-style photographs of people wearing the four masks are arranged in a rectangle. (Blas, n.d.G)

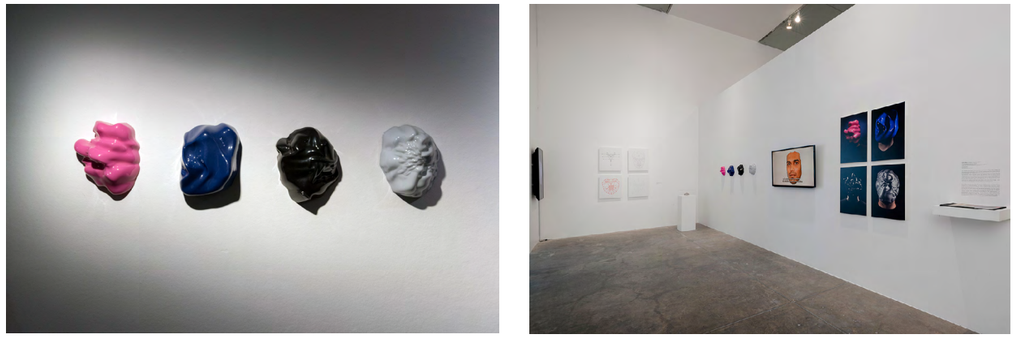


Figure 42.
Exhibition of "Facial Weaponization Suite".

"Facial Weaponization Suite" is also a piece by Zach Blas and was started by him in 2011 and continued until 2014 (Althoff, 2018, pp.3-4). This intermedia art series includes several masks, as well as performances, workshops, a video and photographs (Althoff, 2018, p.4), with the masks as art objects at the centre of the project. Created as counter-biometric masks, they are intended to protect against biometrically harmful representations (Michelsen, 2018, p.43).
These masks were produced in community-based workshops (Blas, n.d.F) by collecting and aggregating participants' facial biometric data (Michelsen, 2018, p.43). Thereby the workshops also discussed global and local biometric and facial recognition strategies and invited exchanges on these topics (Althoff, 2018, p.5).
To create the masks, participants had their faces scanned with a Kinect, which created a 3D model of each face (Blas, n.d.F). These models were then merged in the 3D modelling programme "Hiscott" (Michelsen, 2018, p.43) until a face, resembling an abstract surface, was formed (Blas, n.d.F). In doing so, instead of using the average of the areas of the faces to create the new surface, they were placed on top of each other and inside each other (Althoff, 2018, p.5). From this collective, biometrically unrecognisable face, a mask mould was created, which was used for the vacuum forming of the finished face masks (Blas, n.d.F).

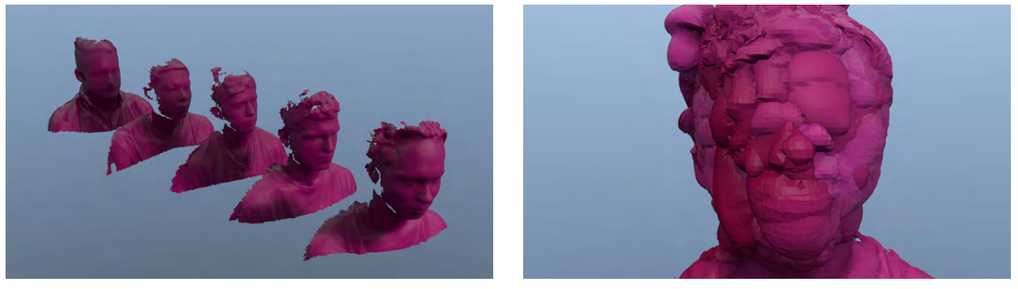


Figure 43.
Steps of facial composite morphing process.

In keeping with their production process, Zach Blas refers to the resulting organically shaped plastic masks as "collective masks" (Monahan, 2015, p.9). This process of mask making is intended to allow participants to wear the faces of many at once and is a reference to the tactic of collective protest, which also aims to make individual participants unrecognisable by wearing the faces of a collective (Blas, n.d.F). Following this idea, the workshop participants decided to go public with the resulting masks in order to draw attention to the disparities of biometric facial recognition and to highlight local applications and uses

(Althoff, 2018, p. 5).
Through the collective process described, four different masks with different political backgrounds were created: a black, a blue and a silver mask, as well as a pink one called "Fag Face" (Althoff, 2018, p.5). Here, Zach Blas aims to contribute to the erasure of identity markers through masks, encouraging identity experimentation and addressing post-identity politics (Monahan, 2015, p. 10). Subsequently, through his work, he advocates for the eradication of difference in terms of a universal identity (Monahan, 2015, p.10). Furthermore, Zach Blas claims the right to be invisible to institutions and the right to social and political equality (Monahan, 2015, p.10).
Among these masks, the ***"Fag Face Mask"***, developed at a workshop in Los Angeles in 2012, is the first and best-known realisation of the concept (Althoff, 2018, p.4). Only the facial data of queer men was used to create this mask, in response to a study that claimed that participants were more likely than average to correctly identify the sexual orientation of a group of men by looking at images of these men's faces for only 50 milliseconds (Althoff, 2018, p.4). This 2008 study by Nicholas O. Rule and Nalini Ambady, published in the Journal of Experimental Social Psychology, follows the principles of existing forms of both harassment and violence directed at the homosexual-appearing face, also known as the "gay face" and "fag face", and validates them scientifically through their work (Blas, n.d.F). Zach Blas criticises them for disregarding subjective driven motivations for interpreting faces and for failing to consider the violence associated with certain readings of the face (Blas, n.d.F). Furthermore this scientific development led to the suspicion that such study results could pave the way for automated algorithms to detect sexual orientation by analysing a person's face (Monahan, 2015). In 2018, this premonition was confirmed by the publication of a study claiming that deep neural networks are more accurate than humans at detecting sexual orientation from facial images (Wang & Kosinski, 2018).
In response to developments in 2008, Zach Blas initiated the creation of the "Fag Face" masks, rejecting the scientific determinism of sexual orientation through this project (Blas, n.d.). In doing so, the artwork is specifically directed against such readability, without making a denial of sexuality (Blas, n.d.F). Rather, it aims at the self-determination of sexuality in a collective and autonomous form (Blas, n.d.F).
As part of the development of the mask, an accompanying video, called "Facial Weaponization Communiqué: Fag Face" was produced to highlight the inequalities of biometric technology. In this video, an ever-changing "Fag Face Mask" speaks in a metallic-sounding, computer-generated high-pitched voice, alternating with Zach Blas, who wears the same mask and speaks in a similar-sounding, darker voice, along with news and surveillance footage. Here, the role of the mask in the video presents it as a living thing that speaks, thus becoming a subject and understood as a communicative tool. (Althoff, 2018, p.6, p.17)

Figure 44.
Video stills of "Facial WeaponizationCommuniqué: Fag Face".

This initial conceptual implementation was followed by the ***black Mask***, which attempted to capture the concept of blackness. In doing so, Zach Blas addressed biometric racism, the favouring of black in radical activist aesthetics, and black as that which is informatically hidden. Another conceptual realisation, the ***blue mask***, was a reaction to veiling legislation in France and, according to Zach, explores feminism's relationship to concealment and imperceptibility (Althoff, 2018, p.5). In addition, he created a ***silver mask***, that addresses the use of biometrics as a security technology on the Mexico-US border, and the resulting nationalist violence. (Althoff, 2018, p.5)

The work was exhibited by presenting the masks as physical objects, along with stylised photographs of them worn, photos of the performances and protests carried out by the workshop participants and the screening of the aforementioned video "Facial Weaponisation Communiqué: Fag Face".

Facial Weaponization Suit & Unlearning Gender in Comparison

This further artwork by Zach Blas is a well-known and relatively early work dealing with facial recognition systems and is therefore of great importance for the analysis of artistic approaches in the context of computer vision. In addition, "Facial Weaponization Suit" served as a model for "Unlearning Gender", where we were particularly inspired by the collective realisation of the

artwork and the integration of different perspectives in the creation process. Nevertheless "Facial Weaponization Suit" is a work of art with a very different implementation from "Unlearning Gender", but thematically the artworks have several points of contact and their way of facilitating exchange also has many similarities, which is why I believe it plays an important role in contextualising "Unlearning Gender".

Perhaps the greatest similarity between the two artworks is their common ***theme of critiquing the use of computer vision systems***. Thereby surveillance, the harsh categorising machine gaze and the empowerment against it are explored and addressed in both works. However, they focus on different aspects of this overarching theme, as I will argue in the course of this comparison.

A further strong similarity is their ***criticism of the understanding that the categorisation of computer vision systems is based on alleged biological factors***. Thereby a common interpretation of the systems' results follows the logic of physiognomy, although in the alleged recognition of sexual orientation as well as gender, social performance rather than biological factors seems to be the decisive factor for the classification of the systems.
This is because, even with regard to the alleged recognition of sexual orientation, a study has shown that the systems' categorisation is most likely not based on facial features, but on the person's presentation and social signalling, with factors such as make-up, eye shadow, facial hair, glasses, selfie angle and sun exposure being the most important markers (Arcas et al., 2018). Again, it is concluded that AI analysis reveals stereotypes and how they are reproduced, rather than revealing biological correlations (Arcas et al., 2018).
This interpretation of performative, social and cultural markers as biological is critiqued by both artworks, acknowledging the social construction of categories and the violent imposition of biologistic logic.

Another major common feature of the works is their approach to ***collective work and exchange*** in the form of workshops. As mentioned above, it was this aspect of "Facial Weaponization Suit" that inspired the development of our artwork, so it is not surprising that the approach to creating collectivity is similar here. For instance, the workshop structures are similar - both include a first part of education and discussion, as well as a second part in which participants take part in the development of the artwork. This second part of the workshop is implemented in "Facial Weaponization Suit" by collecting biometric data from participants, whereas in "Unlearning Gender" it is implemented by involving participants in the conception of further modes. In both cases, a significant part of the development of the artwork is influenced by the participants, although in "Unlearning Gender" no implementation of the modes developed in the workshop has taken place so far, although this was and is intended.

Another point of contact is, similar to the aforementioned artwork "Queer Technologies", is the ***creation of artistic solutions*** to injustices rather than simply demonstrating them. Thus Zach Blas's masks offer invisibility from the machine's eye and political empowerment through shared identity as a solution to the problem of the discriminatory gaze of computer vision systems. Similarly, "Unlearning Gender" with its exgendering modes, offers a technical solution for avoiding the ascription of AGR-systems. In this context it is important to note that both solutions are not and do not aim to be practical or commercially realisable, but are political and artistic in nature.

Another similarity between the two works, which may not be obvious at first glance, is the ***alternative realisation of the same artistic concept with different emphases***. Thereby different approaches are brought together in each work. Thus in the case of "Facial Weaponization Suit", the masks are based on the same concept, follow the theme of biometric recognition and are created using the same technique, but have different subtopics and draw attention to different political injustices. These different political backgrounds of the sub-works are comparable to the alternative modes of "Unlearning Gender". Again, the modes are based on the same concept, share the theme of critiquing AGR-systems and are implemented in the same way, but have different approaches to solutions that address different aspects of the same issue. Thereby one mode introduces exgendering through text and another tackles the non-detection of people, demonstrating different approaches with different emphases.

However, these alternative realisations of the artworks differ in their ***degree of autonomy***. Here, the individual mask seems more separate from the others and would also function when exhibited individually. This is partly due to the fact that they are all conceptually independent and partly due to the presence of individual physical objects. Workshops, performances and protests have also been created for each mask, thus creating their own discourse. "Unlearning

Gender", on the other hand, included one workshop and one installation, in which both alternative modes were integrated together and which could not be exhibited separately without considerable additional effort and restructuring.

Another difference, which I already mentioned in the previous part, is the different ***aspects of computer vision*** dealt with. For example, "Facial Weaponization Suit" mainly criticises facial recognition systems, whereas "Unlearning Gender" refers to AGR-systems, i.e. gender ascription through computer vision. In the latter case, the detection of the face also plays an important role in AGR-systems, but not its recognition and in contrast to facial recognition, AGR-systems also take other factors into account for categorization, such as body language, for example.

Furthermore, the ***artistic approaches to solving the problem*** of categorization or recognition by computer vision systems differ. In "Facial Weaponization Suit", invisibility is implemented as a solution through the concealing masks, while "Unlearning Gender" presents alternative forms of detection. Thereby "Unlearning Gender"'s second mode of non-categorization is based on the similar fundamental idea of abolishing categorization, but is nevertheless fundamentally different in its orientation. Here, the reuse of visual detecting systems contrasts with the prevention of their functionality.

Another significant difference between the two examples is their ***form and level of interactivity***. In the exhibition context, "Facial Weaponization Suit" does not involve any form of interactivity other than viewing the exhibit. In the context of the workshop participants' performances, passers-by become part of the demonstration of how the masks work without any active interaction, and some may even be captured by the facial recognition system without realising it. Unfortunately, apart from a few photographs, there is little documentation of the performances, so the possibility of making a statement here is limited.
The hidden layer of passive and perhaps even non-intentional interaction of "Facial Weaponization Suit"'s performances contrasts with the direct interactivity of "Unlearning Gender". In order to be detected, visitors must approach the installation, which mirrors the computer vision detection on three large screens, thus precluding any unconscious interaction.The form of interaction is also different: in "Facial Weaponization Suit", it is the possibly unconscious participation in a performance; in "Unlearning Gender", it is the interaction with a life-generating video installation.

Furthermore, the artworks show differences in their ***use of media***. Here, "Facial Weaponization Suit" consists of performances and protests, several physical masks, printed photographs and a video, whereas "Unlearning Gender", uses screens with interactively generated augmented camera video and does not include any physical art objects.

They also differ in their ***aesthetic***, which in "Facial Weaponisation Suit" is very playful, with intense colours and organic shapes that follow a clean, glossy plastic look, while "Unlearning Gender" reflects a classic computer vision aesthetic with neon green bounding boxes.

In summary, it can be said that both examples critique the use of computer vision systems, as wells the interpretation of their results, both use workshops for educational purposes, for the exchange and further development of their artworks, and both present an artistic, political solution to the categorizing view of computer vision. However, they differ in their approaches, in the computer vision systems they deal with, in their aesthetics, in their use of media, as well as in their form and level of interactivity.

3.2.4 [x]enoimage

(2022), Miguel Rangil & Mar Osés

The title "[x]enoimage" appears in a large neon green letters. Images of organic alien-like bodies, resembling figures and genitals, twitch rapidly alternating across the screen. Next, the question of whether the image can be taxonomised appears in neon green letters, followed by one of the images evolving - first wafting and shifting in detail, then zooming in on a detail, that becomes more and more pronounced, grows and takes shape. Almost as if it were breathing, it twitches, moves and encloses more and more of the previously black surface around it. Suddenly there is a hard cut and the visualisation of a set of data can be seen, zooming in on a subset of images. Switching from one group of images to the next, the camera's gaze catches them all again at a distance, and they are brought together in a rectangular order, overlaid with green letters that ask, whether these images contribute to the construction of new emancipatory

ideas. Another cut and five similar-looking pink textured images appear, twitching and morphing into new images as neon green bounding boxes labelled "xeno" run across them, sticking to parts of the image here and there. After a few seconds, five completely different images emerge, hardly suggesting a common origin. From fused bodies to abstract shapes and colours, the images change shape in constant animation, while the bounding boxes continue to try to grasp and understand them. (Rangil & Osés, 2022)

"Xenoimage", created in 2022 by Miguel Rangil and Mar Osés (Rangil & Osés, 2022), is an extension of the research carried out at MediaLab Matadero as part of the artwork "Xenoimage Dataset", and represents one of the most successful algorithmic attempts of this (Rangil Gallardo, 2023, p.42, p.52). This previous project, "Xenoimage Dataset", also created in 2022, was developed by a team of people of different nationalities, backgrounds and technical expertise (Rangil Gallardo, 2023, p.42, p.44), including Miguel Rangil and Mar Osés (Medialab Matadero, 2022).

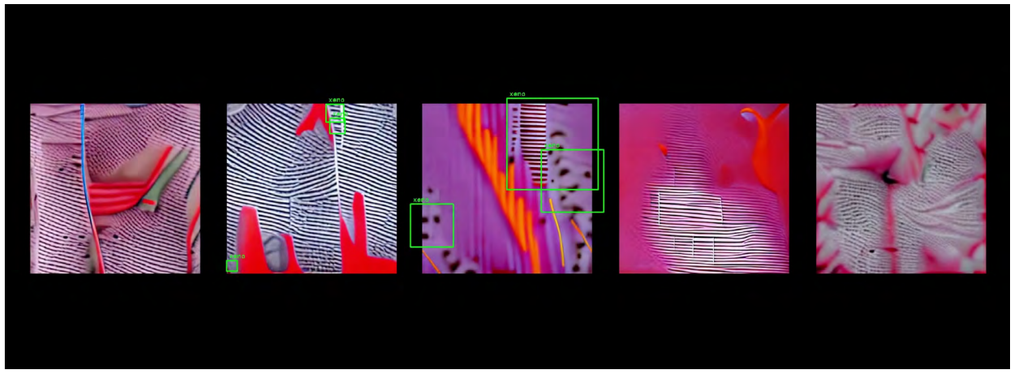


Figure 45.
Evolving Images in "[x]enoimage".

"Xenoimage Dataset" was created in response to the algorithmic non-neutrality of digital technologies, and the resulting dominant visuality of AI-generated imagery (Medialab Matadero, 2022). According to the team, this dominant visuality is rooted in training with gendered images and leads to replication and algorithmic normalisation (Medialab Matadero, 2022). This hegemonic visual imaginary is altered in "Xenoimage Dataset" through the refunctionalisation of image databases (Medialab Matadero, 2022). The project can be divided into two parts - the xeno-database of over 18,000 xeno-images and a manifesto, which contains the underlying ideas and protocols (Rangil Gallardo, 2023, p.45).

The creation of a database that abolishes this dominant visuality was achieved through the use of AI image generation tools (Medialab Matadero, 2022) and by following protocols developed specifically for the project that describe how to train datasets and generate images according to these principles (Rangil Gallardo, 2023, p.44). To create this database, the team used codes from VQGAN+CLIP and Pix2Pix, as well as automated image generation tools such as Runway and MidJouney (Rangil Gallardo, 2023, p.44).
The process described allows for a technological reappropriation that is oriented towards feminist goals (Rangil Gallardo, 2023, p.43). Through this they aim to activate a visual future in the field of gender disruption (Rangil Gallardo, 2023, p.42). Thereby this new appropriation and orientation of visuality follows the principles of Xenofeminism, which is why the team decided to call the resulting type of artificial images "Xenoimage" (Rangil Gallardo, 2023, p.42).
The results of the research were brought together and collected on a common platform and the developed data set was visualised in a web space showing a collection of all the images generated (Rangil Gallardo, 2023, p.44). The "PixPlot method", a method for the visualisation of image sets, was used, enabling the visualisation of tens of thousands of images in a two-dimensional digital space (Rangil Gallardo, 2023, p.48). Here similar images are grouped together, i.e. they are in close proximity to each other (Rangil Gallardo, 2023, p.48). The resulting application allowed users to navigate two-dimensionally through a space and explore the different images generated (Rangil Gallardo, 2023, p.48).

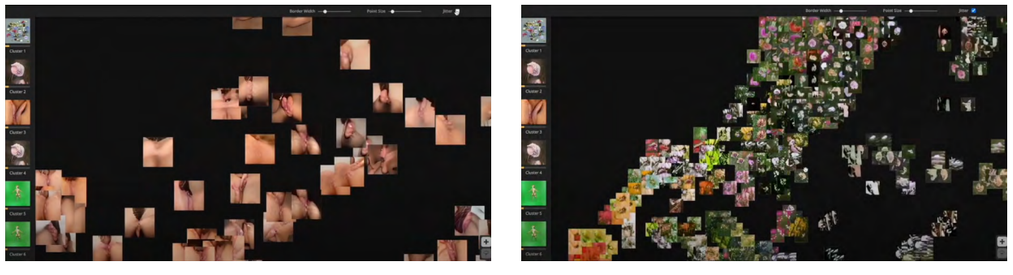


Figure 46.
Visualisation of image sets.

These images generated in "Xenoimage Dataset" are taken up in the project "Xenoimage" and are categorised by computer vision systems (Rangil Gallardo, 2023, p.52). For this purpose, two kinds of algorithms were used: pre-existing haar cascade algorithms for detecting bodies, faces and eyes, and "xeno haar cascade", a self-created image recognition algorithm designed to explore methods for unbiased image classification (Rangil Gallardo, 2023, p.52).

This computer vision algorithm was created by the two artists by using the "Cascade-Trainer-GUI" tool and creating a project folder with two subfolders for the training (Rangil Gallardo, 2023, p.52). Thereby one of these subfolder was filled with images that the algorithm should recognise (positive images) and one subfolder with all types of images except those showing objects that appear in the positive images (negative images) (Rangil Gallardo, 2023, p.53). These described algorithms were then applied to the Xenoimages, which forced the recognition or vision of objects that were not visible (Rangil Gallardo, 2023, p.53). This was successful in that the computer vision systems recognised non-existent objects, demonstrating that the perceptual phenomenon such as pareidolia can be transferred to a machinic entity such as computer vision (Rangil Gallardo, 2023, p.54).

[x]enoimage & Unlearning Gender in Comparison

As this young project is an artwork that Miguel Rangil was involved in creating prior to our collaborative work on "Unlearning Gender", it's had a strong influence on its development. Miguel Rangil brought insights, techniques and experience from "[x]enoimage" to our joint project, so "Unlearning Gender" cannot be seen without the context of that earlier work. Despite the influence of this artwork on the development of "Unlearning Gender", and their strong commonality in addressing and (re)using computer vision systems, these projects are still quite different, both in their artistic realisation and in their approach.

A major commonality between the two projects is their common theme of ***questioning the neutrality of AI systems*** and recognising the ***reproduction of social constructs*** though them. Here, "[x]enoimage" explores how to disrupt the hegemonic visuality of image-generating programs and computer vision systems, while "Unlearning Gender" refers to this disruption of dominant views in AGR-systems. As this hegemonic visuality also includes binary gendered views, both projects can be seen as addressing similar aspects of this dominant visuality, although "[x]enoimage" addresses a broader issue than "Unlearning Gender".

Another important point of contact between the artworks is their inspiration from ***Xenofeminism***. Both examples follow the principles and ideals of this political theory and are strongly based on it in the form of their development. For example, they both implement the refunctionalisation of technology for actual purposes, which is a central theme of Xenofeminism. In this case, this similarity clearly shows the influence of Miguel Rangil's earlier work on "Unlearning Gender", since it was he who introduced its theories into our practices.

Based on the commonality of Xenofemnism, both projects also share the ***(re) use of technology***, which is a central aspect of the artistic approach in both projects. As a result, both artworks use computer vision in their realisation, alienating its original function for their own political intentions.

In addition, the systems are similar in their artistic approach, as both are based on creating their ***own alternatives to a widespread system*** that they criticise. "[x]enoimage" achieves this by creating a new computer vision system "xeno haar cascade", which aims to produce a less biased machine view compared to conventional systems. "Unlearning Gender" operates in a very similar way, offering artistically modified forms of computer vision systems as an alternative to AGR-systems. Here too, both projects offer artistic but non-commercial solutions.

In addition, the projects are similar in some aspects of their ***aesthetics*** and also in the ***underlying logic of their use of it***. Here, both examples use the typical computer vision aesthetic of neon green bounding boxes and labels. Thereby the adoption of this aesthetic by "[x]enoimage" is also visible in the neon green font colour of the project. Thus, both projects adopt the common computer vision aesthetic in order to critique its approach and logic.

The two artworks are also similar in their ***choice of medium***, as both use video. But these videos differ in their ***origin and production***, as one is generated from life and one is pre-recorded. Here, "[x]enoimage" is a pre-existing video that has also been preceded by a life analysis by the computer vision system, but is a recording of it, whereas the videos shown in "Unlearning Gender" are live camera images that are updated and analysed by the system in real time.

The projects also differ from one another in some aspects of their ***aesthetics***. For example, "[x]enoimage" uses not only the aesthetics of computer vision, but also those of AI-generated images. Thereby the morphing that typically occurs in the process of image generation is foregrounded and repeatedly presented in the video. "Unlearning Gender", on the other hand, shows only bounding box camera images and no AI-generated images.

Another difference between the artworks listed is that they focus on ***different sub-themes*** of the otherwise similar overarching theme. For example, both examples involve the creation of less discriminatory artistic solutions to standard computer vision programmes, but there are differences in the way these solutions are applied, and therefore in the results. By applying the "xeno haar cascade" to AI-generated images that already attempt to escape hegemonic visuality, the project "[x]enoimage" addresses the occurrence of the pareidolic phenomenon and other perceptual phenomena in computer vision systems. "Unlearning gender", on the other hand, focuses on the perception of gender in computer vision and how this can be broken by applying the newly created systems to live camera renditions of people.

Another way in which the two artworks differ from one another is in the ***modality of critical expression***. The approach to the creation of "[x]enoimage" seems much more exploratory, which may be explained by the fact that it was conceived as an audiovisual experiment (Rangil Gallardo, 2023, p.52). As a result, the critique of the work is much less direct. For example, how are viewers supposed to know what the label "Xeno" means or stands for? Without considering the conceptual context or the background knowledge of Xenofeminism, viewers will not receive a clear answer to this question from the video alone. Although the questions and statements in the video provide food for thought and hint at the artists' intentions, there seems to be more room for interpretation here than in "Unlearning Gender". On the other hand, "Unlearning Gender" draws a comparison with conventional systems, i.e. the AGR-system, for the purpose of contextualisation, and thus criticises it more directly.

Furthermore, the two projects differ in the way they generate ***community and collectivity***. While "Unlearning Gender" opens up a space for discussion and exchange to the outside world with the workshop, the "Xenoimage Dataset" project, which is related to "[x]enoimage", does this internally, within the team, by including different perspectives on collective work and enabling learning from each other in the process.

They also differ in their ***form of presentation***, reflecting the different contexts for which they are intended: "[x]enoimage" is designed for presentation on platforms such as YouTube or as part of presentations; "Unlearning Gender" is an installation of live-generated videos and cameras created for the exhibition context.

Ultimately, this form of presentation also differentiates them in terms of ***interactivity***. For this reason, "[x]enoimage" does not offer any interaction options for viewers, apart from the comment or like functions offered by the respective platform. In contrast to this, "Unlearning Gender" offers interaction with the computer vision systems via cameras, as already explained in detail in the previous comparisons.

In summary, the two artworks are similar in their political intentions and artistic approach to the (re)use of technology and the creation of alternative solutions, but they address different aspects of a similar theme and also differ in the directness of their critique, their form of presentation and the resulting different opportunities for interactivity.

3.2.5 See my Gender

(2021), Qingyi Ren

A naked person in an empty room, shown in a typical portrait cut to just below the shoulders, is illuminated by a warm side light source, creating dramatic shadows on them. A still image of their face appears in the bottom left corner of the video frame, indicating that it perceives with 99.9% certainty a face and with 99.7% a female person. The person begins to stick small dots on their face, first on their nose, then on their forehead, until their whole face is covered in round, colourful, shimmering stickers. Meanwhile, the computer vision system seems increasingly unsure whether it is recognising a female or a male person. A cut and the performer is mirrored horizontally in a semi-transparent manner, overlaying the original video and forming areas of intersection. They tilt their head and turn slightly, creating a pattern of symmetrical shapes and forms. Then the next round begins - this time with larger round stickers, covering first their eyes, then their mouth, then their entire face, while the AGR-system alternates dramatically between "female" and "male". This continues with a bendable wire, make-up, and large pieces of paper towel finally covering parts of the face until the computer vision no longer recognises a face. (Ren, n.d.)

The recorded performance "See My Gender" by Qingyi Ren from 2021 explores the relationship between gender and computer vision (Ren, n.d.). For this purpose, the computer vision systems of facial recognition and AGR-systems from Amazon (Ren, 2023) are applied to the portrait of the artist, who changes their appearance by applying different materials (Ren, n.d.). By applying them, they create a multitude of varying portraits, which are analysed by the software according to binary gender and the presence of faces (Ren, n.d.). These greatly varying results are accompanied by percentages indicating the degree of certainty with which the results were calculated (Ren, n.d.).
Qingyi Ren created the performance during the Corona pandemic and performed it mainly at digital exhibitions and online events (Ren, n.d.), but later on also exhibited it as a video work in combination with their subsequent project "In Between" in a physical exhibitions (Ren, n.d.A). As part of the online performances, online workshops and Q&A-sessions were also offered by the artist (Ren, n.d.).

Figure 47.
Performance "See My Gender".

The project arose from the artist's personal experiences during their stay in China, where the student dormitories they visited would be unlocked with computer vision. As these dormetories had separate parts for male and female people, an AGR-system was used here to allow access. Here, Qingyi Ren would often be categorised as "male", which went against their idea of them having a normal female face. As a result, they wondered what the system's certainty percentage really meant, and began to experiment with it. In the process, they discovered that their face was well suited to confuse the system. (Ren, 2023)
The idea of covering facial parts came about because Qingyi Ren discovered that they would be categorised as "female" as soon as they covered half their face. Following this the artist tried to identify the one point where the result of the AGR-system could be completely changed and did indeed discover it when working with still images, but not when analysing video, as too many variables would change unintentionally at once. Thus the performance represents this search for the point or detail, which abruptly changes the result of the AGR-system. Moreover, the project was created at the same time as their exploration of their gender identity and therefore fitted into their personal development. (Ren, 2023)
As Qingyi Ren has a background in interaction design, where the audience and their interaction with it plays an important role, a central question in the creation of the performance was what kind of experience they wanted to offer their viewers. The answer, according to Qingyi Ren, was that they wanted to offer viewers the opportunity to see their gender, including the perspective of the machine, hence the title of the project. (Ren, 2023)
With their work, Qingyi Ren also aims to express their political stance on facial recognition services and AGR-systems. In their opinion, the systems functions do not justify their existence and should be subjected to greater scrutiny in their design and use. Furthermore, they criticise the fact that the AGR-systems are based on a concept that they consider absurd and that highlights the gap between gender studies and researchers in terms of their gender awareness. (Ren, 2023)

See My Gender & Unlearning Gender in Comparison

Despite the strong similarities, I only discovered this project after we had already created "Unlearning Gender", which is why it was not a source of inspiration for our work. Nevertheless, its many similarities to our artwork make it an essential project for contextualising "Unlearning Gender". Thanks to the opportunity to have a great exchange with the artist through a personal interview, I also learnt that we have had similar experiences in our work with AGR-systems and share the same beliefs and political attitudes towards AGR-systems, which are reflected in both works. However, they are different in many ways, partly due to the different contexts for which the works were conceived and the different social times in which they were made.
In the following, the performance "See My Gender", rather than the video work, will be compared to the project "Unlearning Gender", as it was conceived as a performance and not as a video work, although it was partly exhibited as such.

Perhaps the greatest similarity between the two artworks is the common theme of ***critiquing AGR-systems***. Both works use AGR-systems to critique the

system's binary gender assignment. Here, "See my Gender" does this by demonstrating the fallibility of the system and "Unlearning Gender" by contrasting it with alternative systems.

Another similarity between the two examples is the ***interaction with the system***. Both examples given involve a real-time interaction with the computer vision system, which in both cases takes place via a real-time camera video. Furthermore, in both examples the interaction takes place via the body, although there are differences in the way the body is used as an interface, as will be explained later.

In addition, they use the same ***medium***, i.e. life-generated video, in which camera video is supplemented by the results of computer vision systems of what they detect in these camera images.

The works are also similar in terms of ***collectivity***, as they both included a workshop and thus the opportunity for exchange, whether between participants and/or artists. Unfortunately, the documentation of the "See My Gender" workshop and its concept is very limited, whereby not enough information is available to compare their structure or content. In addition, the artists of both works engaged with interested parties, for example through question and answer sessions after the performance, as in the case of "See My Gender", or through lectures and presentations, as in the case of "Unlearning Gender".

One aspect that contains both similarities and differences between the projects is the ***aesthetics*** of the projects. Thereby they are similar in that they both show camera images of people in portraits, and both use computer vision systems, the results of which are also displayed, making them part of the aesthetic of the projects.
But just as they differ in the type of computer vision system they use, so too do their aesthetics. In "See My Gender", for example, there is no augmented reality in the form of digital labels or bounding boxes; instead, still images from the videos with labels and percentages are shown on a white background in one corner of the video. In "Unlearning Gender“, however, the neon green flickering bounding boxes created by the computer vision system's detection play a crucial role in the installation's aesthetics.
Furthermore, they also differ in terms of camera orientation, with "See My Gender" oriented horizontally and "Unlearning Gender" showing videos in an upright format. In addition, "See My Gender" also has a much more deliberate set design. Dramatic lighting, a uniform yellow, warm colours, an empty background and the naked body of the performer seem coordinated and deliberate. Although the setup of the "Unlearning Gender" installation for the exhibition in Luxembourg is somewhat similar, with the free, empty space behind the interactors and the monochrome blue light source, the setup of the installation during the Ars Electronica exhibition seems far less staged, with its restless background and scattered light. As a result, "Unlearning Gender" does not correspond to the considered, symmetrical and harmonious aesthetic of the "See my Gender" set.
In addition, the two works use ***computer vision systems from different companies*** and therefore present their results differently, whereby both use AGR- and face-detection. In "See My Gender", systems from amazon are utilised, which leads to the results being presented with a still image, a label and a percentage. In "Unlearning Gender", on the other hand, computer vision systems from OpenCV are used, which become visible as an augmented layer by showing detection and labelling. Here, no label is shown for face recognition and no percentage is displayed for either AGR- and face-detection. However, this is not a common implementation form of the company, but was deliberately adapted by Miguel Rangil and myself to avoid confusion among visitors, as we felt that many would not know the meaning of the percentages.

In addition, the interactivity of the works differs according to ***who interacts*** with the systems, as in "See My Gender" it is the performer, not the visitor, who interacts with the computer vision systems. As a result, the viewers of "See My Gender" have the passive role of observers, as is common in performances. This form of interaction can also be attributed to the period in which the performance was created, which was during the initial period of the Corona pandemic. Subsequently, the artwork was planned for an online exhibition and usually took place as an online performance. As a result, an easy way for visitors to interact with the system in the physical exhibition space, as in the case of "Unlearning Gender", was not possible, or only realisable with great additional effort.

Furthermore, as already indicated, their ***form of interaction*** differs, even though both take place via the body of the interacting person. In "See My Gender", the

interaction with the system takes place through the application of materials to the body, whereas in "Unlearning Gender", movements, position in space, clothing and facial expressions are ways of interacting with the AGR-systems. Additionally, the performer in "See My Gender" interacts with the systems in a very deliberate way, gradually changing details. In contrast, "Unlearning Gender" has a much freer form of interaction, which varies greatly and does not follow a predetermined concept or sequence as it is carried out by the visitors.

Moreover, they also show differences in their ***artistic approaches***. Here, "See My Gender" takes a very playful, boundary-pushing and experimental approach by examining what influences the categorization of the system. In doing so, the work demonstrates the conceptual absurdity through the flawed character of the system used, thereby critiquing it.
In "Unlearning Gender", visitors can also playfully test the limits and origins of the binary categorization by interacting with the AGR-system, and from our observations many have done so, but nevertheless the artistic approach behind "Unlearning Gender" is to show alternative artistic solutions in order to draw attention to the problem. Here, then, the pointing out of the problem is set against the solutions to it, whereby "Unlearning Gender" also demonstrates the problem through the option of testing the original AGR-system, but proceeds in a much more indirect and unclear way than "See My Gender".

In addition, the works also differ in ***form***, with "See My Gender" taking the form of a live performance and "Unlearning Gender" that of an interactive installation. Although the use of similar systems and similar forms of interaction is an important similarity, the projects are therefore very different in their implementation.

In summary, both works share many fundamental points of contact, such as the exploration of AGR-systems and the formulation of a critique of them, the display of AGR-system results in live-generated video content that are influenced by the body as an interface, and the active interaction with and bringing together of participants through workshops, talks and the like. But as similar as they are in many ways, they also differ in many details. For instance, they don't share the same aesthetic, they use computer vision systems from two different companies for their realisation, they have different forms, possibilities of interactivity for visitors and artistic approaches to expressing criticism.

3.2.6 Summary & Findings

The artworks listed show a wide variation in terms of artistic approach, use of medium and form, whereby addressing different perspectives on the intersections of technology, gender and queerness. Whether creating a queer alternative reality, exploring the mechanic gaze, or creating technical solutions to the ideological problems of technology, the works have various approaches to artistically generating knowledge, drawing attention to grievances, and critiquing socially neutralist perceptions of technology.

In this context, the artworks "See My Gender" and "[x]enoimage" focus on experimenting with the gaze of computer vision systems, while "Queer Technologies", "Facial Weaponization Suite" and "Unlearning Gender" create artistic solutions to technological biases. In addition, "[x]enoimage" and "See My Gender" take a more exploratory approach than the other artworks and have a more abstract and playful character. Besides, "See My Gender", "Facial Weaponization Suite" and "Unlearning Gender" share their work with workshops to create spaces for exchange and discussion. In addition, all the artworks follow an artistic approach of demonstrating their critical theme by addressing society's influence on technology, albeit in very different forms and intensities.

These diverse artistic approaches appear to have different strengths and weaknesses, allowing a strategic view of their approaches to achieving artistic and political goals. Thereby, the experimental and exploratory artistic approach seems to be fundamental to the generation of new knowledge, while the demonstration of alternative solutions can have a great political impact. Exposing and demonstrating social absurdity, whether through exaggeration, queering or fallibility, also seems to be an effective artistic approach to drawing attention to and mobilising around grievances.

The artworks make use of very different aesthetics, media and forms, although they all have the identification and visualisation of queer perspectives in common. In addition, they all pursue the goal of breaking heteronormative and hegemonic norms, however different their realisation of this may be.

What was particularly surprising here, was the extent to which earlier works had already addressed key issues of contemporary AI development, patterns

of discrimination and misuse of the technology, and how these were strongly reflected in the critiques of the artworks. Thereby, technology, whether in the form of hardware, computer vision systems or AI image generation systems, is recognised by all the artworks as cultural and social before it is technical.

Chapter
04

Conclusion

4.1 Results and Findings

After all the gathering of knowledge, the elaboration and description of Miguel Rangil's and my work, and the analysis and comparison of a selection of media artworks, the answer to the key question ***"How does computer vision reproduce and manifest the social construct of binary gender and how could gender be deconstructed by (re)using this technology in artistic practices?"*** remains.

To follow this up, I start by answering the first part of the question, ***"How does computer vision reproduce and manifest the social construct of binary gender?"***. It is important to bear in mind that AGR-computer vision systems in particular represent a clear and strong form of manifestation and reproduction of binary gender, so it is possible to analyse how computer vision reproduces gender by looking at these systems more closely. Almost all AGR-systems follow a biologistic essentialist understanding, which in this context means that they unquestioningly distinguish only between "female" and "male" and that this categorisation is made on the basis of physical and gender performative aspects. As a result, they conceptually assume that gender is only binary and readable from the outside. Thus, the conception of the systems corresponds to the binary gender model and establishes this social norm through computer vision technology.
In doing so, AGR-systems utilise gender stereotypes and equate gender performance with gender identity. This could also be determined by my own tests with and observations of OpenCV's AGR-system, which showed that the system mainly categorised based on gender stereotypical behaviour and presentation. In this context, it was also suspected that these seem to play a decisive role in the categorisation, and that the may system rely on them to a greater extent than previous studies have suggested. This means that gender seems to primarily be recognised and categorised through performed style, implying that the gender system classifies stereotypical presentation, whether through clothing, hairstyle, facial expression, posture or movement, according to these stereotypes. This affirmation of gender stereotypes by the system contributes to a reproduction of the binary gender construct.
The implementation of the systems, and thus the creation of the datasets, is also based on the production of this standard, using cis persons with an from the developers as clear "female" or "male" read representation, which are considered particularly appropriate. Accordingly, a technical realisation of gender binarity was actively created. This type of creation of data sets corresponds to a clear reproduction of binary gender by continuing it through technical implementation in systems.
The construct of binary gender is also perpetuated and reproduced in the use of AGR-systems, since, for example, when used to control binary gendered toilets, they enforce this binary norm as a controlling authority and actively deny genderqueer people their identity as well as their existence.

The second clause of the guiding question ***"How could gender be deconstructed by (re)using this technology in artistic practices?"*** can be answered through the artistic work of "Unlearning Gender", as well as through the comparison with the selected media artworks and their artistic practices.
In this context, the "Unlearning Gender" project itself represents an answer to the question, even if it is only one answer among many. In this respect, the "Unlearning Gender" installation includes an alternative mode that is an exemplary exgendering through a computer vision system, demonstrating an artistic approach to deconstructing binary gender. Through the exgendering system and its setting in contrast to an AGR-system, gender is presented as constructed and in this context also deconstructed, demonstrating an alternative form of perception.
Furthermore, the external impact of our project contributes to the deconstruction of binary gender. Thus, for instance, the visitors' interaction with the exhibit encouraged them to reflect on and challenge the binary gender norm. However, our active participation in the form of presentations, talks and running the workshop as part of the project, as well as our interaction with visitors, has certainly made a difference, albeit on a small scale, and can therefore be seen as an active step towards deconstructing the gender binary.

However, in order to shed light on other artistic practices and how they can deconstruct binary gender, let's examine the comparisons of "Unlearning Gender" with other media artworks and the findings thereof. In this context, artworks that did not exclusively deconstruct gender or were only concerned with breaking heteronormative norms were also included in the comparison, as was the inclusion of an artwork that (re)used technology per se rather than computer vision. Nevertheless, they share the identification and visualisation of queer perspectives, the goal of breaking heteronormative and hegemonic norms, as well as an understanding of technology as cultural and social before being

technical, which is why their artistic approaches play an important role in the context of deconstructing binary gender through artistic practices. In addition, they share the goal of an artistic approach to demonstrate their critique by addressing society's influence on technology.
Here, an artistic approach that could be found in them is the experimenting with the gaze of computer vision systems, as well as creating artistic solutions to technological biases, exposing and demonstrating social absurdity and the sharing of their work and knowledge through workshops to create spaces for exchange and discussion. In this context, the experimental and exploratory artistic approach seemed to be fundamental to the generation of new knowledge, while the demonstration of alternative solutions appeared to be a productive way to generate a strong political impulse. Moreover, exposing and demonstrating social absurdity seemed to be an effective artistic approach to draw attention to and mobilise around grievances.

4.2 Future Prospects

This chapter offers a perspective on the future intentions for the "Unlearning Gender" project. Thereby it includes the possible further development and exhibition of the installation, ideas for future realisations of the talk and workshop, as well as potential further research into the functioning of AGR-systems.

Starting with the ***"Unlearning Gender" installation***, a possible next step could be to implement the alternative categories created by the workshop participants in order to achieve a greater diversity of perspectives and solutions to develop a more community-based project. Here, depending on the approach, we could either implement the ideas collected from the participants in the workshop, or strive to realise a workshop in which the coding of alternative categories is carried out by the workshop participants themselves, in order to then implement them.
Further development of the future installation could involve implementing Facebook's new recognition software, "SAM" alongside automatic descriptive text generation by ChatGPT. This integration, based on the recognised details of the user interacting with the installation, would, as previously mentioned, allow for more tailored descriptions for one of our alternative installation modes, bringing the implementation of the installation even closer to our original idea of deployment.
Furthermore, it would of course be desirable to exhibit the installation in the context of other festivals, exhibitions or events. Depending on the possibilities, the construction of the installation could be further adapted and optimised to our original ideas of implementation through access to more resources, be it for the procurement of more hardware or the provision of premises. For example, acquiring full-length mirror-sized screens would allow for a more impressive realisation that is closer to our mirror installation concept.
Our ***workshop and lecture*** could be used in other contexts, such as other festivals, events or even lectures and seminars. The combination of the two could be particularly interesting in many areas to raise awareness. Additionally, a future initiative could involve running the workshop with a group that has a technical background and therefore the skills to implement their concepts for alternative categories themselves. Also, a more in-depth and less time-constrained workshop could be a future approach, enabling participants to discuss and exchange perspectives extensively, as well as more detailed elaboration of their concepts for alternative categories.
In addition, as explained in the chapter "3.1.8 Gender Performance & AGR-Systems" a future avenue may be to ***pursue the evidence from my observations*** which argues that AGR-systems may rely more heavily on gender performance in their categorisation than previously thought. This could be achieved by investigating other systems as part of a scientific study to gain further insight into the functioning of AGR-systems. Here, the results would be especially interesting in terms of the social conditions that may underpin their operation and could lead to new insights into the social construction of gender.

In general, although we have been able to draw attention to the questioning of the gender binary, the problematic conception, functionality and use of computer vision services, as well as the invisibility of subjectivities that do not conform to the algorithmic gaze, through our realisations and also through public efforts, the further pursuit of these project goals has remained a personal concern of mine. Despite the successes we have accomplished, I believe that there is still a long way to go to achieve social change. This is another reason why the continuation of the project, possibly through the above-mentioned approaches, and the dissemination of the insights gained through the artistic and theoretical work are of great importance to me.

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List of Figures

depiction

Figure 11. Sketches by Miguel Rangil

Figure 12. Screenshot by Jelena Mönch of the by Jelena Mönch owned Miro-board "Interface Cultures" from the "Critical data- Unlearning Gender" section, https://miro.com/app/board/o9J_loJElXA=/?share_link_id=19664803774 (Accessed: 14.03.2024)

Figure 13. Video screenshot by Jelena Mönch, https://www.youtube.com/watch?v=gRQCB0e3upE&ab_channel=MiguelRangil (Accessed: 14.03.2024)

Figure 14. Photo by Jelena Mönch

Figure 15. Screenshot by Jelena Mönch of the by Jelena Mönch owned Miro-board "Interface Cultures" from the "Critical data- Unlearning Gender" section, https://miro.com/app/board/o9J_loJElXA=/?share_link_id=19664803774 (Accessed: 15.03.2024)

Figure 16. Photo by Miguel Rangil, sketches by Jelena Mönch and Miguel Rangil

Figure 17. Screenshot by Jelena Mönch of the by Jelena Mönch owned Miro-board "Interface Cultures" from the "Critical data- Unlearning Gender" section, https://miro.com/app/board/o9J_loJElXA=/?share_link_id=19664803774 (Accessed: 15.03.2024)

Figure 18. Video screenshot by Jelena Mönch of video documentation created by Linaá Pulido Barragán

Figure 19. Screenshot by Jelena Mönch of the by Jelena Mönch owned Miro-board "Interface Cultures" from the "Critical data- Unlearning Gender" section, https://miro.com/app/board/o9J_loJElXA=/?share_link_id=19664803774 (Accessed: 15.03.2024)

Figure 20. Screenshot by Jelena Mönch of the by Jelena Mönch owned Miro-board "Interface Cultures" from the "Critical data- Unlearning Gender" section, https://miro.com/app/board/o9J_loJElXA=/?share_link_id=19664803774 (Accessed: 15.03.2024)

Figure 21. Created by Miguel Rangil and Jelena Mönch

Figure 22. Photo by Jelena Mönch

Figure 23. Screenshot of a screen video recorded by Jelena Mönch

Figure 24. Screenshot of a screen video recorded by Jelena Mönch

Figure 25. Screenshot of a screen video recorded by Jelena Mönch

Figure 26. Photos by Kathrine Hardman

Figure 27. Photos by Manuela Naveau

Figure 28. Photos by Emma Silvana

Figure 29. Photos by Violetta Walkolbinger

Figure 30. Photos by Violetta Walkolbinger

Figure 31. Photos by Violetta Walkolbinger

Figure 32. Photos by Violetta Walkolbinger

Figure 33. Document scans by Jelena Mönch

Figure 34. Photos by Violetta Walkolbinger

Figure 35. Document scans by Jelena Mönch

Figure 36. Video screenshots by Jelena Mönch, https://www.dorftv.at/video/43098 (Accessed: 15.03.2024)

Figure 37. Video screenshots by Jelena Mönch,https://www.youtube.com/watch?v=lHgyGnB0kj4&list=PLYo-87cqWEg0s7JWyo5PQE8e3e-yaLGN7e (Accessed: 08.04.2024)

Figure 38. Photos by Christopher O'Leary, https://zachblas.info/works/queer-technologies/ (Accessed: 15.03.2024)

Figure 39. Photos by Christopher O'Leary, https://zachblas.info/works/queer-technologies/ (Accessed: 15.03.2024)

Figure 40. Photos by Christopher O'Leary, https://zachblas.info/works/queer-technologies/ (Accessed: 15.03.2024)

Figure 41. Photos by Christopher O'Leary, https://zachblas.info/works/queer-technologies/ (Accessed: 15.03.2024)

Figure 42. Photos by Christopher O'Leary, Tanner Cook, David Evans Frantz, Dominic Paul Miller, Christine Butler, Orestes Montero Cruz, and Oliver Santana, https://zachblas.info/works/facial-weaponization-suite/ (Accessed: 15.03.2024)

Figure 43. Screenshots by Zach Blas, https://median.newmediacaucus.org/caa-conference-edition-2013/escaping-the-face-biometric-facial-recognition-and-the-facial-weaponization-suite/ (Accessed: 15.03.2024)

Figure 44. Photos by Christopher O'Leary, Tanner Cook, David Evans Frantz, Dominic Paul Miller, Christine Butler, Orestes Montero Cruz, and Oliver Santana, https://zachblas.info/works/facial-weaponization-suite/ (Accessed: 15.03.2024)

Figure 45. Video screenshot by Jelena Mönch, https://www.youtube.com/watch?v=IBRY9vEO_nQ&ab_channel=MiguelRangil (Accessed: 15.03.2024)

Figure 46. Video screenshot by Jelena Mönch, https://www.youtube.com/watch?v=IBRY9vEO_nQ&ab_channel=MiguelRangil (Accessed: 15.03.2024)

Figure 47. Video screenshot by Jelena Mönch, https://renqingyi.com/see-my-gender (Accessed: 15.03.2024)

Appendix A

Externalization

Jelena Mönch/Artist, Jasper Vogel/Technical Support

Interactive installation, 2022

Have you ever struggled with intrusive thoughts? If yes, you are not alone. About 94% of people have them. They pop up in your head like thoughts from someone else and get more dominant, if you try to ignore them. But how would you feel, if there is a way to confront them? To externalize your inner fear and just watch it grow and grow? An exposure, similar to being exposed to an intrusive thought in therapy.
Imagine your thought growing around you, surrounding you physically. Watch it spreading out wider and wider while a voice whispers it in your ear. Try to actively perceive your emotions and watch how your fear first starts to grow but then affects you less and less. Calm yourself by watching your thought around you. How do you feel about it now?
The artwork „Externalization“ deals with the handling of obsessive thoughts and draws attention to the commonness of them. Visitors are able to exposit themselves with one of their intrusive thoughts by taking part in the interactive installation.

Lack of Love

Jelena Mönch/Artist, Daniel Fischer/Technical Support
Video, interactive book and art-object, 2023

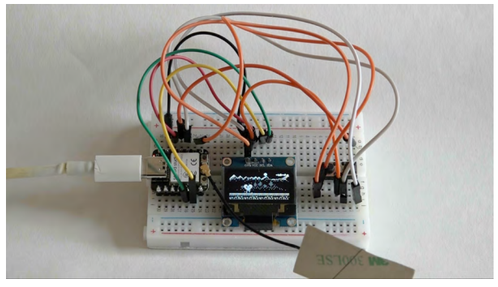
Perhaps the most difficult thing that a human being is called upon to face is loving. At first it seems really easy and for some it might be, but most of us struggle with it. Trust issues, insecurities, feeling unloved and helpless - relationships are not easy and it seems like we don't really know how to love in general. We are meant to know but no one is teaching us.

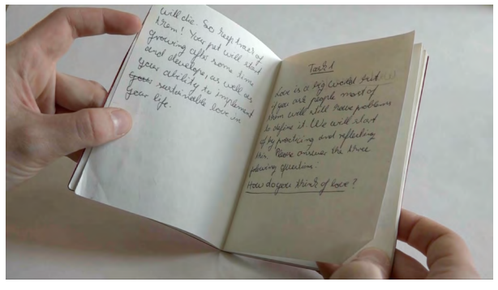
Regarding on how to implement sustainable love I think themesizing our lack of love in society and defining love are probably the first steps we have to take. Therefore I created the project „Lack of Love" and started of by interviewing very close friends of mine about this topic.

Additionally I designed a small interactive guide based on the book „All about Love" from Bell Hooks. With hands on tasks it teaches different theories and let's you explore your way of implementing love.

Next to the Love Guide you will find a virtual pet - the LoveMe-Pet. After starting it you will have to care for this little creature and take responsibility. But to keep you hooked on working through the Love Guide you will only be allowed to feed your virtual buddy when full filling one task. So if you forget to do them your pet will have to go to sleep hungry. If you repeatedly forget to do them your LoveMe-Pet will die. So keep track of them!

Participants were: *Paulina Henningsen, Helena Brock & Emily Ritterpush*



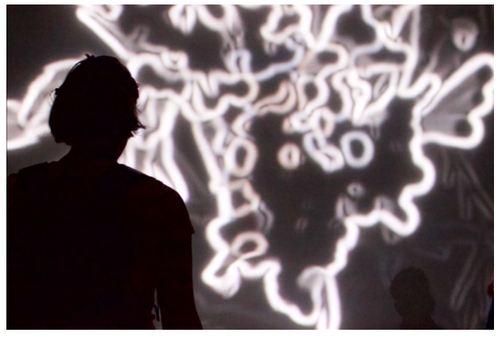


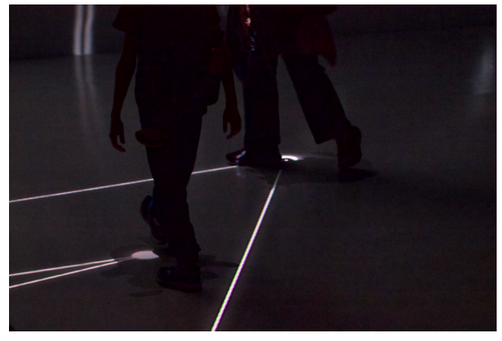
Microbial World

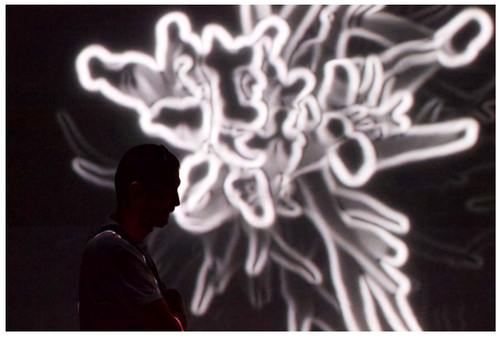
Jelena Mönch/Artist, Katharina Mayrhofer, Cécile Bucher &
Holunder Heiß/Technical Support
Interactive DeepSpace Application, 2023

Ever wondered what those tiny bacteria that inhabit our world actually look like? „Microbial World" offers you the chance to explore that! By using captivating visuals of microbes, this interactive platform provides a gateway to the world of science. It brings the microbial realm to life by generating ever-changing structures in real-time, mimicking the growth of microbial life.

You find yourself standing in a dimly lit room, illuminated solely by circles of light radiating from the feet of the people surrounding you. A luminous circle also glows at your own feet, shifting with each step you take, with a thin line drawn between the two of your circles. As you and another individual approach each other organic formations resembling the intricate patterns of bacteria grow on the illuminated wall. You observe in wonder as these structures continue to spread and expand, ultimately enveloping the entire room in a living, microbial tapestry.





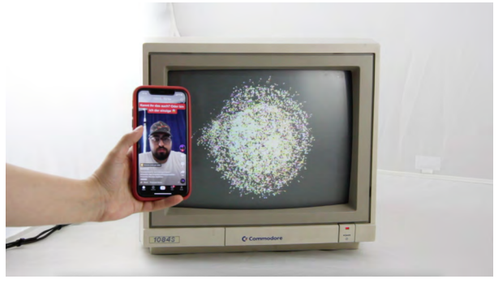


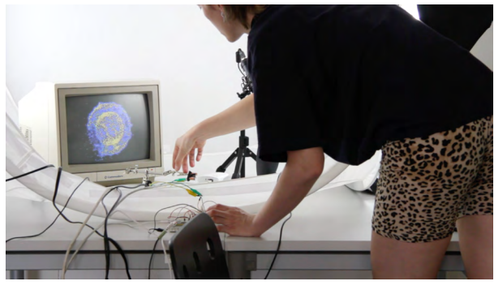
Unseen Signals

Jelena Mönch, Davide Bruno, Linaá Pulido Barragán &
Viktória Angyal/Artists
Interactive Installation, 2022

Around us is communication. Constantly signals are passing by, which we are not able to see or hear by our limited spectrum of our senses. How would our world look like if we could perceive them? Would we be more reflective or critical about them?

This installation unveils the hidden structure of radio communication happening via wifi. It captures the imperceptible sounds of interaction of technical devices surrounding us and amplifies them. To not only hear but also be able to see this interaction, it is made visible through audio reactive realtime visuals. An old tv is displaying the image reacting to the alien like sounds produced by the signals of a router. This analog TV is used as a receptor and screen projector, as well as for manipulating the image through an analog interface.





Appendix B

Written Interview with Miguel Rangil

Interview Questions
For Miguel Rangil about the project „Unlearning Gender“

- How did you come up with the idea for the project „Unlearning Gender“?

  The idea for "Unlearning Gender" emerged from the urgent need to address the problematics of categorization in digital technologies, particularly in visuality and gender representation. Influenced by the xenofeminist perspective, the project aimed to disrupt the hegemonic visuality and reappropriate technological tools in a feminist key. It was inspired by a collective engagement with issues of gender, identity, and representation in the era of artificial intelligence.

- What is your motivation?

  Mainly, our motivation was to activate a future visual field in gender disruption, using artificial intelligence as a new sensory tool for visualization. The project was a response to the urgency to reflect on and transform the biases and constraints found in current technological and visual frameworks.

- What are your biggest artistic influences?

  In the field of gender and technology poetics I think Zach Blas is a great reference to keep in mind. His work *Facial Weaponization Suite* (2012) is now a classic in the field of tactical media and queerness, and a crucial inspiration to *Unlearning Gender*. Another artist I admire is Shu Lea Cheang for her speculative ability to generate queer fictions. In *Unlearning Gender*, we are proposing facial recognition algorithms that do not exist, that name and categorize without categorizing anything at all. I consider this to be pure speculation, another queer fiction we should fight for.

- How did the project start? /How did the collaboration between you and Jelena happen?

  The project began when our ideas converged. We had similar ideas, we both wanted to work with the poetics of computer vision in the key of gender deconstruction, and it was in the context of the Critical Data course where we started working together.

- Why did you choose the topic of gender?/ Did your gender queerness have an influence on you starting this project?

  Although I do not make my queerness explicit through my performativity, this project is born from the need to dissolve these gender markers. I had already worked on other projects that speculated on a future where these markers do not respond to a binary and sexist logic. One of my projects, *Xenoimage Dataset* (2022) sought to generate A.I. images free of the prevailing gender rubric in current image generation models. I believe that here I have tried to follow this research line, which, in turn, is a personal one.

- Why did you choose the topic of computer vision (specifically facial detection and automatic gender recognition)?

We chose computer vision, specifically facial detection and automatic gender recognition, due to its widespread impact and the inherent biases within these technologies. These tools have profound implications on identity and privacy, often reinforcing gender norms and biases. By focusing on this area, we aimed to critically analyze and challenge the normative assumptions embedded in these systems and explore the possibilities of creating more inclusive and fluid representations of gender and identity.

- What was/is your goal with this project?

  Our main objective was to poeticize in an artistic work the main problematic that concerns computer vision technologies: the invisibilization of subjectivities that do not adapt to the algorithmic gaze.

- Do you think you were able to reach them?

  In a way, yes. As it was a very interactive work, speaking directly to the person in front of it, it generated an immediate opinion. But it is true that perhaps "how" it was done could lead to some confusion. It is an artistic work that transits between the binary and the queer in a little perceptible way, so sometimes our discourse could be diluted.

- Where do you see limitations?

  In the technology we use. The models we used in the project and our knowledge of how to play with them was limited, so we could not achieve all the goals we wanted.

- What is the origin of the name of your project?

  For me, "unlearning gender" refers directly to the discipline of *machine learning,* and how with our project we try to unlearn how machines analyze and categorize the world with a binary gaze.

- What were key development steps of your project?

  It was a very structured process. We had many meetings and discussions on how to proceed. If I remember correctly we started defining the theoretical framework in which we were going to move, the technology we were going to use and then we started to design the installation itself through sketches. And then, we started programming. From then on everything was a bit more diffuse and unstructured.

- How was your experience working with automatic gender recognition?

  Hard. These are models that require a good technical knowledge, and we didn't have that much.

- What were exhibitions visitors reaction?

  People connected very well with the work. Visitors spent a lot of time in front of it, taking pictures and discussing. It's a very attractive work, in the sense that it works as a mirror, you see your reflection and your digital reflection in the world. A reflection affected by violent and binary logics. Gives a lot to talk about.

- What is your political stance on facial recognition services?

  My stance on facial recognition services is critical, particularly concerning their use in enforcing normative and oppressive structures. The project reflects a political commitment to questioning and resisting the ways facial recognition can reinforce binary and discriminatory practices.

- What is your opinion on automatic gender recognition systems?

My opinion on automatic gender recognition systems is that they are inherently flawed and limited, often perpetuating stereotypes and excluding non-binary and transgender individuals. These systems impose a binary understanding of gender and fail to capture the complex, fluid nature of identity.

Appendix C

Interview with Qingyi Ren

0:2:3.460 --> 0:2:6.70
Mönch, Jelena Johanna Rosemarie Gertraud
So let's start with the first questions.

0:2:6.320 --> 0:2:7.340
Mönch, Jelena Johanna Rosemarie Gertraud
What are your pronouns?

0:2:8.20 --> 0:2:9.720
Ren, Qingyi
They, them, of course.

0:2:12.40 --> 0:2:12.740
Ren, Qingyi
What about you?

0:2:12.390 --> 0:2:13.320
Mönch, Jelena Johanna Rosemarie Gertraud
I thought so.

0:2:14.430 --> 0:2:15.780
Mönch, Jelena Johanna Rosemarie Gertraud
I'm actually not using any.

0:2:16.640 --> 0:2:18.420
Ren, Qingyi
Alright, OK. Yeah.

0:2:18.720 --> 0:2:19.150
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:2:19.160 --> 0:2:27.120
Mönch, Jelena Johanna Rosemarie Gertraud
So they them also fine, because sometimes it's a bit of a hazard to always say my name, but I will prefer just my name.

0:2:28.540 --> 0:2:29.70
Ren, Qingyi
Yeah.

0:2:31.960 --> 0:2:42.300
Ren, Qingyi
But sometime sometime like like if you just use they them and people get your something more than just guessing.

0:2:43.530 --> 0:2:43.710
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:2:42.390 --> 0:2:46.550
Ren, Qingyi
So for me it's easier no matter they use or not, but I will explain.

0:2:49.30 --> 0:2:49.800
Ren, Qingyi
Yeah, right.

0:2:49.480 --> 0:2:59.220
Mönch, Jelena Johanna Rosemarie Gertraud
Actually, I think it's quite easy to do to use in English, but for example when you try to do it in German it's it's a bit off.

0:2:59.540 --> 0:2:59.910
Ren, Qingyi
Yeah.

0:2:59.310 --> 0:3:2.80
Mönch, Jelena Johanna Rosemarie Gertraud
I still do it, of course, but it's not as easy.

0:3:2.960 --> 0:3:3.690
Ren, Qingyi
Yeah, yeah, yeah.

0:3:3.780 --> 0:3:6.590
Ren, Qingyi
I'm learned German, so I got what you mean. Yeah.
0:3:6.670 --> 0:3:9.830
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh yeah, it doesn't really make sense in that way.

0:3:9.730 --> 0:3:10.920
Ren, Qingyi
Yeah, yeah.

0:3:11.770 --> 0:3:18.610
Mönch, Jelena Johanna Rosemarie Gertraud
Also, we use the English term in German, so we use they them in German.

0:3:18.310 --> 0:3:19.630
Ren, Qingyi
OK. OK.

0:3:20.420 --> 0:3:21.420
Mönch, Jelena Johanna Rosemarie Gertraud
It's been like whoa.

0:3:21.840 --> 0:3:22.930
Ren, Qingyi
Ah.

0:3:23.410 --> 0:3:24.360
Mönch, Jelena Johanna Rosemarie Gertraud
But good to know.

0:3:24.370 --> 0:3:30.450
Mönch, Jelena Johanna Rosemarie Gertraud
I kind of thought so, but of course you can't really like you don't really know it till you ask.

0:3:31.350 --> 0:3:32.680
Ren, Qingyi
Yeah, yeah, that's true.

0:3:35.470 --> 0:3:36.180
Mönch, Jelena Johanna Rosemarie Gertraud
OK.

0:3:36.230 --> 0:3:40.160
Mönch, Jelena Johanna Rosemarie Gertraud
Next questions how did you come up with the idea for your project „See my gender“?

0:3:44.420 --> 0:3:46.70
Ren, Qingyi
I'm I'm seeing your question as well.

0:3:49.380 --> 0:3:49.620
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:3:44.420 --> 0:3:46.70
Ren, Qingyi
I think for the next four question even five is kind of combined, it's not really, yeah.

0:3:52.820 --> 0:3:54.110
Mönch, Jelena Johanna Rosemarie Gertraud
It's just for me.

0:3:54.120 --> 0:3:56.590
Mönch, Jelena Johanna Rosemarie Gertraud
It's just like I don't have to ask all the questions.

0:3:56.600 --> 0:4:3.250
Mönch, Jelena Johanna Rosemarie Gertraud
It's more like if there's something missing, I can ask some of the other questions, but I totally get it.

0:4:5.790 --> 0:4:6.590
Ren, Qingyi
Yeah, I got it.

0:4:3.300 --> 0:4:7.150
Mönch, Jelena Johanna Rosemarie Gertraud
I would start with the first one and if you say everything else, I'm not gonna like.

0:4:7.160 --> 0:4:8.220
Mönch, Jelena Johanna Rosemarie Gertraud
Don't worry about it, don't worry.

0:4:8.490 --> 0:4:9.770
Ren, Qingyi
Oh, that's cool.

0:4:9.930 --> 0:4:15.560
Ren, Qingyi
So this project is one of my master project as well.

0:4:15.810 --> 0:4:18.360
Ren, Qingyi
It's not my final project, my final project.

0:4:18.370 --> 0:4:21.820
Ren, Qingyi
If you check the website is „in between“, that's my final project.

0:4:22.420 --> 0:4:22.610
Mönch, Jelena Johanna Rosemarie Gertraud
Uh.

0:4:22.620 --> 0:4:22.850
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:4:22.860 --> 0:4:23.730
Mönch, Jelena Johanna Rosemarie Gertraud
I saw that as well!

0:4:21.830 --> 0:4:24.190
Ren, Qingyi
It's kind of, yeah.

0:4:24.230 --> 0:4:26.910
Ren, Qingyi
So the first is come up with.

0:4:27.30 --> 0:4:31.40
Ren, Qingyi
We were having a collaborative work with..

0:4:31.90 --> 0:5:1.70
Ren, Qingyi
I was studying UK and we were have collaborated with BBC and it was telling a better AI story because at that time people think like when you go to go on the street have a random conversation with the people and ask them what is artificial intelligence and a lot of people will describe AI just like movie is really some magic and you can really can do something.
0:5:7.280 --> 0:5:7.530
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah!

0:5:1.80 --> 0:5:10.500
Ren, Qingyi
So that's moment from the artistic and also the academics start found the gap between the public and the real AIs.

0:5:10.750 --> 0:5:17.980
Ren, Qingyi
So they try to introduce some school to working with, like how what is AI to the public?

0:5:18.350 --> 0:5:27.580
Ren, Qingyi
So that's that's time, uh, I realized cause because we are a a big team and everyone working with AI in their different way.

0:5:27.770 --> 0:5:37.160
Ren, Qingyi
Someone like a decolonial AI or some like a I use a lot of power and not setting environment friendly.

0:5:38.340 --> 0:5:38.580
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:5:37.230 --> 0:5:42.500
Ren, Qingyi
So I try to find them my position, like my situation to talking about the AI.

0:5:42.790 --> 0:5:53.220
Ren, Qingyi
And actually, because artificial intelligent in China is really common use, we start to use the the face to for the payment.

0:5:53.410 --> 0:6:0.320
Ren, Qingyi
I think by four years ago, so the official recognition is really common use in China as well.

0:6:0.410 --> 0:6:10.380
Ren, Qingyi
And in my last year of my back troller, our you know, in China, we have the student dormitory and the the male and the female dormitories separately.

0:6:18.150 --> 0:6:18.430
Mönch, Jelena Johanna Rosemarie Gertraud
What?

0:6:10.490 --> 0:6:26.770
Ren, Qingyi
So they in the last year of the the the domain create use the artificial intelligence to yeah is is like you go to you can unlock you can open the door with the with the facial recognition yeah so and as the first not.

0:6:25.800 --> 0:6:35.580
Mönch, Jelena Johanna Rosemarie Gertraud
Was that automatic gender recognition, right, not just facial recognition, but it it's deciding what gender you have and then giving you the possibility to unlock the door or not.

0:6:35.640 --> 0:6:36.640
Mönch, Jelena Johanna Rosemarie Gertraud
Is that right?

0:6:35.920 --> 0:6:39.90
Ren, Qingyi
Yeah basically is more security.

0:6:39.100 --> 0:6:47.290
Ren, Qingyi
They, they, they, they, they will recognize who you are and also with the gender and at the first yeah.

0:6:46.940 --> 0:6:49.450
Mönch, Jelena Johanna Rosemarie Gertraud
Ah so its recognition but it also has, like the inscription of gender.

0:6:49.610 --> 0:6:50.300
Ren, Qingyi
Yeah.

0:6:50.350 --> 0:6:54.480
Ren, Qingyi
And at first I we are not really formally use that.

0:6:54.490 --> 0:6:56.500
Ren, Qingyi
So our information is not in it.

0:6:56.510 --> 0:6:58.560
Ren, Qingyi
Yeah, but people are having fun with that.

0:6:58.690 --> 0:7:3.740
Ren, Qingyi
And I'll be recognized as as male a lot with the facial recognition.

0:7:4.250 --> 0:7:5.100
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I get that.

0:7:3.750 --> 0:7:10.790
Ren, Qingyi
Yeah, and I find it quite funny because in the real life I got this misgender a lot as well.

0:7:11.260 --> 0:7:11.460
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:7:10.840 --> 0:7:13.230
Ren, Qingyi
So in the machine, the same things still happen.

0:7:13.440 --> 0:7:25.670
Ren, Qingyi
So so when when we working with the BBC receives project, everyone working with a different AI-application and I was the first one I work with chatbot because that time is not ..

0:7:27.150 --> 0:7:27.500
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:7:25.680 --> 0:7:34.50
Ren, Qingyi
..Chat-GPT is not not popular, and that chatbot is, uh, the mental health consulting that chatbot.

0:7:34.200 --> 0:7:34.950
Mönch, Jelena Johanna Rosemarie Gertraud
I know it.

0:7:34.960 --> 0:7:36.100
Mönch, Jelena Johanna Rosemarie Gertraud
I know it.

0:7:35.580 --> 0:7:36.570
Ren, Qingyi
Yeah, yeah, yeah.

0:7:47.960 --> 0:7:48.120
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:8:8.940 --> 0:8:9.150
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:7:36.620 --> 0:8:53.910
Ren, Qingyi
That kind of chat bot, if you come up with some identity problem and you wanna, you wanna consult with your you you have with you face some identity trouble and you you are getting stressed with this and the the chat bot are hard to distinguish your like your your personal pronouns and and give some advice as well as saying more terrible. That's the first thing I'm working with and after that I we had a small workshop and basically everyone try different tool so and I use and we were using the facial recognition together and that time I most of the time might be recognized as male as well like and people are having fun of this result and I keep thinking what does that means when they give a certain number of of like your 18% male or female but that same time yeah at the same time I found my face is quite easy to confuse the machine I cover half my face and become male and half I become female it's work every time so I start the image under the project yeah But that's project is umm actually it's during the pandemic.

0:8:54.10 --> 0:8:58.960
Ren, Qingyi
So I did a lot of online performance and also online workshop.

0:8:58.970 --> 0:9:3.310
Ren, Qingyi
There's a good time for me because it's quite fit this just online.

0:9:3.320 --> 0:9:6.270
Ren, Qingyi
People behind the screen and I am working with.

0:9:6.400 --> 0:9:6.610
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:9:7.20 --> 0:9:7.650
Ren, Qingyi
Yeah.

0:9:7.700 --> 0:9:14.700
Ren, Qingyi
So that's what's my first project basically is questioning like, what's this number means?

0:9:15.610 --> 0:9:15.750
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:9:14.710 --> 0:9:19.490
Ren, Qingyi
I can easily to change the number and also from the beginning to end.

0:9:19.560 --> 0:9:38.140
Ren, Qingyi
We will find that there is no 100% male or female, so kind of like uh, you use like the machine use the binary database to training these binary uh ai-application but still fail to recognize me in a binary way.

0:9:38.940 --> 0:9:39.150
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:9:42.980 --> 0:9:44.10
Mönch, Jelena Johanna Rosemarie Gertraud
Do you mean binary?

0:9:44.250 --> 0:9:45.730
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh, what do you mean with benero?

0:9:46.50 --> 0:9:47.410
Mönch, Jelena Johanna Rosemarie Gertraud
What do you mean with banner?

0:9:47.710 --> 0:9:48.710
Mönch, Jelena Johanna Rosemarie Gertraud
Do you mean binary?

0:9:48.970 --> 0:9:50.20
Ren, Qingyi
Binary, binary!

0:9:51.160 --> 0:9:53.330
Mönch, Jelena Johanna Rosemarie Gertraud
OK, sorry I wasn't sure if I understood OK.

0:9:51.660 --> 0:9:59.930
Ren, Qingyi
Uh, alright, I yeah, yeah, I I'm see the script is it's going wrong.

0:9:59.990 --> 0:10:1.470
Ren, Qingyi
Some some word, that's what.

0:10:1.120 --> 0:10:5.350
Mönch, Jelena Johanna Rosemarie Gertraud
It don't worry, I I will correct it, but I just didn't understand my safe completely.

0:10:5.360 --> 0:10:6.500
Mönch, Jelena Johanna Rosemarie Gertraud
So I was like what was.

0:10:6.560 --> 0:10:7.90
Ren, Qingyi
Yeah, yeah.

0:10:6.980 --> 0:10:9.320
Mönch, Jelena Johanna Rosemarie Gertraud
But yeah, from the context I understood, it's binary, yeah.

0:10:9.660 --> 0:10:10.290
Ren, Qingyi
Yeah.

0:10:10.360 --> 0:10:14.540
Ren, Qingyi
And for the for the artist influence me, I think it's not.

0:10:14.550 --> 0:10:17.270
Ren, Qingyi
Artist it's more like uh, the scholar.

0:10:17.280 --> 0:10:20.170
Ren, Qingyi
The first is the Joy Buolamwini.

0:10:20.300 --> 0:10:21.500
Ren, Qingyi
You must know them.

0:10:22.370 --> 0:10:23.60
Ren, Qingyi
The the people.

0:10:22.800 --> 0:10:23.630
Mönch, Jelena Johanna Rosemarie Gertraud
Can you say that again?

0:10:24.190 --> 0:10:25.630
Ren, Qingyi
Joy Buolamwini.

0:10:26.840 --> 0:10:27.920
Mönch, Jelena Johanna Rosemarie Gertraud
No, I don't think so.

0:10:27.930 --> 0:10:30.320
Mönch, Jelena Johanna Rosemarie Gertraud
I'm not sure I'm really bad with names as well.

0:10:30.760 --> 0:10:33.480
Ren, Qingyi
They work with their their supervise pH.

0:10:33.830 --> 0:10:37.640
Ren, Qingyi
Supervisor asking is teamer or some the they they are.

0:10:37.650 --> 0:10:42.110
Ren, Qingyi
They are from the MIT and they work with the gender shades.

0:10:43.50 --> 0:10:44.390
Mönch, Jelena Johanna Rosemarie Gertraud
Gender SHader I've heard before.

0:10:44.800 --> 0:10:48.320
Ren, Qingyi
Yeah, there's, uh, they are the author of that project.

0:10:45.980 --> 0:10:49.700
Mönch, Jelena Johanna Rosemarie Gertraud
Well, gender shader, yes!

0:10:49.710 --> 0:10:50.280
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, yeah, yeah.

0:10:50.290 --> 0:10:51.590
Mönch, Jelena Johanna Rosemarie Gertraud
The YouTube videos, yeah, I love them.

0:10:51.860 --> 0:10:52.90
Ren, Qingyi
Yeah, yeah, yeah.

0:10:52.820 --> 0:10:53.710
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, they're really cool.

0:10:52.640 --> 0:10:57.810
Ren, Qingyi
Yeah, that's that's kind of my the my inspire.

0:10:57.960 --> 0:11:2.130
Ren, Qingyi
But they working on the on the on the race more than gender.

0:11:2.420 --> 0:11:3.200
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:11:3.240 --> 0:11:5.150
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I just because of the person..

0:11:5.650 --> 0:11:6.30
Ren, Qingyi
Yeah.

0:11:7.140 --> 0:11:7.270
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:11:6.290 --> 0:11:18.340
Ren, Qingyi
It's bit different so and also I read the old cast paper a lot most case and I will have lectures with some in January.

0:11:18.650 --> 0:11:23.880
Ren, Qingyi
So it's kind of like and Manuela helped me, invented them.

0:11:24.110 --> 0:11:27.680
Ren, Qingyi
So that's the person who really inspired me a lot.

0:11:27.690 --> 0:11:31.180
Ren, Qingyi
And I emailed them a lot during I was making the project.

0:11:31.630 --> 0:11:31.930
Mönch, Jelena Johanna Rosemarie Gertraud
Cool.

0:11:31.190 --> 0:11:36.170
Ren, Qingyi
So we we close friend, yeah, so.

0:11:35.740 --> 0:11:37.70
Mönch, Jelena Johanna Rosemarie Gertraud
The person from Gender Shaders?

0:11:37.960 --> 0:11:39.740
Ren, Qingyi
No, it's another person.

0:11:40.630 --> 0:11:41.20
Mönch, Jelena Johanna Rosemarie Gertraud
OK.

0:11:39.750 --> 0:11:43.490
Ren, Qingyi
I can send you a link, this person working on.

0:11:44.790 --> 0:11:48.150
Ren, Qingyi
On gender more than.

0:11:55.640 --> 0:11:55.900
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:11:50.290 --> 0:11:55.980
Ren, Qingyi
They are a PhD student in the University of Washington.

0:11:59.990 --> 0:12:0.760
Mönch, Jelena Johanna Rosemarie Gertraud
I will have a look.

0:12:1.410 --> 0:12:1.910
Ren, Qingyi
Yeah.

0:12:5.90 --> 0:12:5.810
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:12:2.0 --> 0:12:7.280
Ren, Qingyi
You can check their word and they basically work with the facial recognition and gender.
Transgender.

0:12:8.50 --> 0:12:8.280
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:12:8.190 --> 0:12:8.750
Ren, Qingyi
Yeah.

0:12:8.940 --> 0:12:12.850
Ren, Qingyi
Also, is there another scholar name is Morgan Scheuerman?

0:12:13.20 --> 0:12:19.150
Ren, Qingyi
I don't really like their work because they try to make the the the the label diversity.

0:12:19.460 --> 0:12:20.330
Ren, Qingyi
It's not just male.

0:12:20.80 --> 0:12:20.580
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:12:21.180 --> 0:12:22.440
Ren, Qingyi
Yeah, yeah.

0:12:20.590 --> 0:12:22.820
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, that's not 100 percent my approach as well.

0:12:28.630 --> 0:12:29.330
Ren, Qingyi
Yeah.

0:12:29.380 --> 0:12:30.610
Ren, Qingyi
Yeah, it's making nonsense.

0:12:23.710 --> 0:12:31.150
Mönch, Jelena Johanna Rosemarie Gertraud
I'm like, OK, that doesn't really like the categories are still there.

0:12:31.750 --> 0:12:37.580
Ren, Qingyi
If I, I be recognized as a 85% trans woman what does that mean?

0:12:38.160 --> 0:12:39.210
Mönch, Jelena Johanna Rosemarie Gertraud
Ah yeah.

0:12:39.870 --> 0:12:40.50
Ren, Qingyi
Yeah.

0:12:39.220 --> 0:12:41.30
Mönch, Jelena Johanna Rosemarie Gertraud
Can you type on the name anyways?

0:12:46.930 --> 0:12:47.840
Ren, Qingyi
Sure.

0:12:48.230 --> 0:12:49.310
Ren, Qingyi
I will send you.

0:12:41.40 --> 0:12:51.270
Mönch, Jelena Johanna Rosemarie Gertraud
Because I think that's a really good an example on how to show what I don't want to approach, because like also it's a lot of if you think about it.

0:12:57.960 --> 0:12:58.630
Ren, Qingyi
Yeah.

0:12:52.200 --> 0:12:59.390
Mönch, Jelena Johanna Rosemarie Gertraud
And I also write that in my thesis projects like this can also be used for a lot of things.

0:12:58.740 --> 0:12:59.650
Ren, Qingyi
Yeah, that's it.

0:13:0.140 --> 0:13:0.880
Ren, Qingyi
Yeah, yeah.

0:13:1.320 --> 0:13:5.330
Mönch, Jelena Johanna Rosemarie Gertraud
There's a lot of potential for misuse, I think, but yeah, I guess that's for a lot of things.

0:13:5.340 --> 0:13:8.560
Mönch, Jelena Johanna Rosemarie Gertraud
Also, for automatic generic cognition 100 percent.

0:13:14.880 --> 0:13:15.440
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:13:8.100 --> 0:13:15.850
Ren, Qingyi
But but this Morgan, they are more famous than us, depend on the project they work with.

0:13:15.860 --> 0:13:18.730
Ren, Qingyi
Yeah, and now I also emailed them as well.

0:13:22.950 --> 0:13:23.190
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:13:18.740 --> 0:13:23.250
Ren, Qingyi
I'm quite angry with this, like I was really emotional at time I email.

0:13:23.260 --> 0:13:25.240
Ren, Qingyi
I said was, what do you think?

0:13:29.60 --> 0:13:29.200
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:13:25.250 --> 0:13:32.910
Ren, Qingyi
What that means for if we be recognized as a transgender and also and also there is some ethical problem.

0:13:33.360 --> 0:13:37.950
Ren, Qingyi
Umm, like you can think about for this kind of technology.

0:13:38.220 --> 0:13:41.120
Ren, Qingyi
Do we really want people be recognized?

0:13:41.780 --> 0:13:44.160
Mönch, Jelena Johanna Rosemarie Gertraud
Yes, I think so too.

0:13:42.590 --> 0:13:52.950
Ren, Qingyi
And so so if they, if they wanna make the the the label gender label diversity mean which means gonna feel more like queer data.

0:13:53.760 --> 0:13:53.980
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:13:53.930 --> 0:14:1.940
Ren, Qingyi

So which means a lot of maybe the transgender or some peoples data will be into the commercial application.

0:14:2.350 --> 0:14:2.830
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:14:2.290 --> 0:14:6.880
Ren, Qingyi
It's it's not a good idea, but they reply me strongly as well.

0:14:7.110 --> 0:14:14.130
Ren, Qingyi
From their perspective is like uh, and if you do not do it, someone will do it.

0:14:14.200 --> 0:14:16.750
Ren, Qingyi
The big company will be there anyway.

0:14:17.110 --> 0:14:19.500
Ren, Qingyi
So yeah, so that's their attitude.

0:14:19.170 --> 0:14:21.140
Mönch, Jelena Johanna Rosemarie Gertraud
I'm not sure that's a good argument to be honest. AT least I don’t agree. But I I get what they I get the position where they're coming from because we did some workshops.

0:14:31.20 --> 0:14:31.530
Ren, Qingyi
Umm.

0:14:31.180 --> 0:14:31.770
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:14:32.100 --> 0:14:37.30
Mönch, Jelena Johanna Rosemarie Gertraud
Also, in this feminist I in the lecture thing and ask electronica where you're also participating.

0:14:56.830 --> 0:14:57.320
Ren, Qingyi
Umm.

0:14:37.890 --> 0:15:10.310
Mönch, Jelena Johanna Rosemarie Gertraud
And even if after we explain everything and and we said like we don't wanna make a new gender identity and we try to get away from a categories in general and question like the system we had a small session where they could also think about solutions, they would come up with and there were quite there were some that were more like this like one or two where like I we could just do all the gender identities but there were also a lot of people who were like let's just set the person define themselves.

0:15:11.310 --> 0:15:11.880
Ren, Qingyi
Yeah.

0:15:10.320 --> 0:15:12.200
Mönch, Jelena Johanna Rosemarie Gertraud
That's the best there was.

0:15:12.600 --> 0:15:14.960
Mönch, Jelena Johanna Rosemarie Gertraud
I like that. They got it.

0:15:11.890 --> 0:15:15.240
Ren, Qingyi
Yeah, yeah, yeah, I have.

0:15:18.510 --> 0:15:18.700
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:15:15.630 --> 0:15:31.400
Ren, Qingyi
I made some workshop as well, but it's more like I ask everyone take photo of some self and label is by themself randomly, not just like gender and there is there is a tool name is teachable machine.

0:15:31.570 --> 0:15:35.180
Ren, Qingyi
You don't know that? I can send you.

0:15:35.190 --> 0:15:37.540
Ren, Qingyi
This it's really fun thing to play with.

0:15:39.300 --> 0:15:55.450
Ren, Qingyi
Like you basically can set any cutter grads in this tool and you can fill your data and you will you can training your own kind of facial recognition, not just face recognition is can be really other thing object.

0:15:55.160 --> 0:15:57.730
Mönch, Jelena Johanna Rosemarie Gertraud
Everything right, there's also supposes that you can do right?

0:15:57.450 --> 0:15:57.920
Ren, Qingyi
Yeah.

0:15:57.740 --> 0:15:59.300
Mönch, Jelena Johanna Rosemarie Gertraud
I think I've tried something like this.

0:15:57.930 --> 0:15:59.580
Ren, Qingyi
Yeah, yeah, yeah, yeah.

0:16:8.640 --> 0:16:8.910
Ren, Qingyi
Umm.

0:15:59.660 --> 0:16:10.980
Mönch, Jelena Johanna Rosemarie Gertraud
Didn't really work on my computer, but I I tried to use it for another project to use like different symbols from my hand for interaction, but I didn't think about that.

0:16:10.990 --> 0:16:11.910
Mönch, Jelena Johanna Rosemarie Gertraud
That's pretty cool.

0:16:12.160 --> 0:16:12.340
Ren, Qingyi
Yeah.

0:16:12.340 --> 0:16:14.580
Mönch, Jelena Johanna Rosemarie Gertraud
Like just making up your categories and then..

0:16:14.500 --> 0:16:24.390
Ren, Qingyi
Yeah, so so you open basically open this question to the, to the people who you're working with like to rethink about where these categories comes from.

0:16:24.620 --> 0:16:33.390
Ren, Qingyi
Some might have to decide it the the category. Someone is sitting in front of computer decided we have a male and female.

0:16:33.690 --> 0:16:33.920
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:16:37.20 --> 0:16:37.850
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:16:37.890 --> 0:16:38.940
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, that's really cute.

0:16:33.500 --> 0:16:39.880
Ren, Qingyi
So now you you decided that you are butterfly and no way change like you as a person.

0:16:41.600 --> 0:16:44.870
Mönch, Jelena Johanna Rosemarie Gertraud
That was also an idea from one person off the workshop that we did.

0:16:47.320 --> 0:16:47.590
Ren, Qingyi
Umm.

0:16:55.290 --> 0:16:55.910
Ren, Qingyi
Yeah.

0:16:45.80 --> 0:16:56.120
Mönch, Jelena Johanna Rosemarie Gertraud
They wanted to have like animals instead of anything else because they said, especially in the queer community, did a lot of people identify more with like animals instead of anything else.

0:16:56.180 --> 0:16:56.600
Ren, Qingyi
Yeah.

0:16:56.610 --> 0:16:56.710
Ren, Qingyi
Yeah.

0:16:56.390 --> 0:16:57.720
Mönch, Jelena Johanna Rosemarie Gertraud
And I was like, that's so cute.

0:16:58.250 --> 0:17:0.430
Ren, Qingyi
Yeah, yeah, yeah, that's right.

0:17:0.80 --> 0:17:1.110
Mönch, Jelena Johanna Rosemarie Gertraud
Like I'm a bear.

0:17:1.240 --> 0:17:1.920
Mönch, Jelena Johanna Rosemarie Gertraud
I'm a butterfly.

0:17:3.330 --> 0:17:4.110
Ren, Qingyi
Yeah, I know.

0:17:3.560 --> 0:17:5.260
Mönch, Jelena Johanna Rosemarie Gertraud
Makes a lot more sense for a lot of people.

0:17:4.510 --> 0:17:7.100
Ren, Qingyi
Plan for not just animal plant.

0:17:7.760 --> 0:17:9.670
Mönch, Jelena Johanna Rosemarie Gertraud
Ah yeah, I would love plans.

0:17:7.310 --> 0:17:9.950
Ren, Qingyi
Some people are, yeah.

0:17:10.60 --> 0:17:11.850
Mönch, Jelena Johanna Rosemarie Gertraud
I'm I'm a planned person as well.

0:17:12.170 --> 0:17:12.370
Ren, Qingyi
No.

0:17:12.220 --> 0:17:13.850
Mönch, Jelena Johanna Rosemarie Gertraud
The idea was just with animals, though.

0:17:14.530 --> 0:17:16.940
Ren, Qingyi
Hmm yeah.

0:17:16.600 --> 0:17:19.650
Mönch, Jelena Johanna Rosemarie Gertraud
OK, so perhaps we can do the next question.

0:17:19.660 --> 0:17:23.990
Mönch, Jelena Johanna Rosemarie Gertraud
I think you kind of answered it anyways, but not that specific yet.

0:17:24.420 --> 0:17:24.620
Ren, Qingyi
Yeah.

0:17:24.580 --> 0:17:28.290
Mönch, Jelena Johanna Rosemarie Gertraud
Did your gender-queerness have an influence on your starting this project.

0:17:29.170 --> 0:17:35.500
Ren, Qingyi
Yes, really influence because I grew up in a different, in totally different environment.

0:17:36.230 --> 0:17:36.450
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:17:35.510 --> 0:17:51.300
Ren, Qingyi
I living in China and I grew up in China and and during the time I start to explore myself

identity and fortunately in China was in a really intentions situation like now it's not that openness.

0:17:54.470 --> 0:17:54.730
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:17:51.390 --> 0:17:56.340
Ren, Qingyi
When I was five years ago, five years old, or it was much better.

0:17:56.350 --> 0:18:19.370
Ren, Qingyi
But now, like when I when I was in university last year and all the queer and the gender related group shutting down by the government and and all the all the we have the WeChat and so we have the WeChat Group or WeChat Group disappeared one night just know announce just totally disappeared.

0:18:19.500 --> 0:18:24.230
Ren, Qingyi
So that's just that's a the environment I was living with.

0:18:24.340 --> 0:18:37.380
Ren, Qingyi
So this project making at the first year at living in London, so that's a first year I before I I was living in US but but it's really countries that place.

0:18:38.90 --> 0:18:38.550
Mönch, Jelena Johanna Rosemarie Gertraud
Uh, OK.

0:18:37.470 --> 0:18:48.60
Ren, Qingyi
So I really go to a diversity place and see different people and see how they're living their life and to to settle date themselves in this, this world.

0:18:48.330 --> 0:18:58.700
Ren, Qingyi
So it's the the project happens at the same time as I start to freely explore my gender identity, yeah.

0:18:57.430 --> 0:19:2.770
Mönch, Jelena Johanna Rosemarie Gertraud
Ah OK, so it really was something that really fit into your personal and development as well.

0:19:3.180 --> 0:19:3.830
Ren, Qingyi
Yeah.

0:19:3.880 --> 0:19:7.390
Ren, Qingyi
And also I, I, uh identity myself.

0:19:7.400 --> 0:19:9.970
Ren, Qingyi
Not like as non-binary.

0:19:10.470 --> 0:19:10.800
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:19:10.120 --> 0:19:17.140
Ren, Qingyi
It's not because I like like I I have some crisis with my biology sex.

0:19:19.80 --> 0:19:19.280
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:19:23.130 --> 0:19:23.400
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:19:17.660 --> 0:19:25.120
Ren, Qingyi
I found myself to not fit the world. The ideal woman.

0:19:25.130 --> 0:19:30.300
Ren, Qingyi
The ideal female. So I I I feel that's not the place for me.

0:19:30.920 --> 0:19:31.200
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:19:30.350 --> 0:19:34.160
Ren, Qingyi
So I I said this myself in the non-binary.

0:19:34.170 --> 0:19:35.680
Ren, Qingyi
This, this, this place?

0:19:35.770 --> 0:19:36.270
Ren, Qingyi
Yeah.

0:19:41.430 --> 0:19:41.620
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:19:36.330 --> 0:19:41.860
Ren, Qingyi
And for this I'm working with facial recognition is actually the same problem.

0:19:42.10 --> 0:19:48.300
Ren, Qingyi
I thought my face is just a female face, but the machine not think like that and.

0:19:47.860 --> 0:19:49.60
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I have the same issue.

0:19:51.100 --> 0:20:0.470
Mönch, Jelena Johanna Rosemarie Gertraud
Has really funny because not the exact same issue, but I identify myself as agenda because I think like the whole system is crap. I don't want to be in that.

0:20:2.0 --> 0:20:2.300
Ren, Qingyi
Right.

0:20:2.370 --> 0:20:12.650
Mönch, Jelena Johanna Rosemarie Gertraud
And I've had situations like this also already in reality, like people asking me in the tram what gender I have and people telling me not to go to the female toilet and stuff, but.

0:20:12.470 --> 0:20:12.730
Ren, Qingyi
Umm.

0:20:13.80 --> 0:20:17.370
Mönch, Jelena Johanna Rosemarie Gertraud
Umm, with facial recognition, automatic general recognition?

0:20:17.380 --> 0:20:18.60
Mönch, Jelena Johanna Rosemarie Gertraud
It was way worse.

0:20:18.730 --> 0:20:19.250
Ren, Qingyi
Yeah, yeah, yeah.

0:20:19.270 --> 0:20:21.680
Mönch, Jelena Johanna Rosemarie Gertraud
It was like, no, you just male.

0:20:21.780 --> 0:20:21.960
Ren, Qingyi
Yeah.

0:20:21.850 --> 0:20:24.40
Mönch, Jelena Johanna Rosemarie Gertraud
And then sometimes he was like, perhaps your female.

0:20:24.290 --> 0:20:30.530
Mönch, Jelena Johanna Rosemarie Gertraud
And yeah, for me that was also I tried to find out why it does what when?

0:20:30.690 --> 0:20:30.950
Ren, Qingyi
Umm.

0:20:30.660 --> 0:20:32.190
Mönch, Jelena Johanna Rosemarie Gertraud
So I really tried to.

0:20:36.250 --> 0:20:36.500
Ren, Qingyi
Umm.

0:20:32.840 --> 0:20:46.190
Mönch, Jelena Johanna Rosemarie Gertraud
I didn't do the same thing like you with covering my face, but I had the approach of seeing what influences the recognition and for me I found out it's a lot about how you perform your gender as well.

0:20:46.590 --> 0:20:47.950
Ren, Qingyi
Yeah, yeah, yeah.

0:20:48.0 --> 0:20:48.950
Mönch, Jelena Johanna Rosemarie Gertraud
That's so funny, right?

0:20:53.300 --> 0:20:53.510
Ren, Qingyi
Umm.

0:20:48.960 --> 0:21:1.150
Mönch, Jelena Johanna Rosemarie Gertraud
Because you think it's like something that is like just because of how you look or like how you are physically built on the view of the camera, which is already so much bullshit to like, see gender.

0:21:1.200 --> 0:21:1.740
Ren, Qingyi
Umm.

0:21:1.160 --> 0:21:5.250
Mönch, Jelena Johanna Rosemarie Gertraud
But it's not even that it's way other things as well.

0:21:10.160 --> 0:21:10.530
Ren, Qingyi
Umm.

0:21:5.260 --> 0:21:13.160
Mönch, Jelena Johanna Rosemarie Gertraud
I think for me it was like I I found out that if I smile and I'm like positioning my head like this, I'm gonna be female.

0:21:13.170 --> 0:21:16.70
Mönch, Jelena Johanna Rosemarie Gertraud
And if I'm gonna be like this and not smiling, I'm gonna be may.

0:21:16.260 --> 0:21:16.570
Ren, Qingyi
Uh.

0:21:16.220 --> 0:21:27.210
Mönch, Jelena Johanna Rosemarie Gertraud
So me being on the between the lines was also something that made it a much more, much more exciting to explore it because I could switch some times.

0:21:25.880 --> 0:21:30.660
Ren, Qingyi
Umm do you have a A a particular software you work with?

0:21:34.600 --> 0:21:40.700
Mönch, Jelena Johanna Rosemarie Gertraud
For the project I'm working with, harcasscade automatic gender recognition. so it's quite common.

0:21:42.340 --> 0:21:43.710
Mönch, Jelena Johanna Rosemarie Gertraud
One which is quiet.

0:21:46.190 --> 0:21:46.610
Ren, Qingyi
Right.

0:21:48.500 --> 0:21:48.750
Ren, Qingyi
Umm.

0:21:43.720 --> 0:21:52.230
Mönch, Jelena Johanna Rosemarie Gertraud
I think it's something that is quite often used, so like a really big thing to use harcasscade , it's not the newest one, but there was also not our goal.

0:21:52.240 --> 0:21:55.670
Mönch, Jelena Johanna Rosemarie Gertraud
We just wanted to have like the automatic gender recognition.

0:21:55.440 --> 0:21:55.860
Ren, Qingyi
Umm.

0:21:55.680 --> 0:21:58.50
Mönch, Jelena Johanna Rosemarie Gertraud
And yeah, I'm mostly using this one.

0:22:1.430 --> 0:22:1.990
Ren, Qingyi
Yeah, yeah, yeah.
0:21:58.60 --> 0:22:6.70
Mönch, Jelena Johanna Rosemarie Gertraud
I think another one would probably be other results as well because it it's just right, but that's experience, which is what I did with this one.

0:22:6.80 --> 0:22:6.890
Mönch, Jelena Johanna Rosemarie Gertraud
Which one did you use?

0:22:7.860 --> 0:22:8.590
Ren, Qingyi
I was.

0:22:8.660 --> 0:22:17.910
Ren, Qingyi
I have this struggle because I am I was playing with, uh, a small one because it's kinda with on time and I do performance with that.

0:22:18.200 --> 0:22:22.10
Ren, Qingyi
I'm worried because of the the the copyright problem.

0:22:22.20 --> 0:22:29.660
Ren, Qingyi
If I do a online stuff, but the performance or all every research I work with Amazon recognition.

0:22:30.260 --> 0:22:31.860
Mönch, Jelena Johanna Rosemarie Gertraud
Ah yeah, I've heard of this as well.

0:22:31.440 --> 0:22:31.950
Ren, Qingyi
Yeah.

0:22:32.610 --> 0:22:33.240
Mönch, Jelena Johanna Rosemarie Gertraud
That's also really.

0:22:32.240 --> 0:22:34.790
Ren, Qingyi
Yeah, because it's a big, big company.

0:22:34.800 --> 0:22:36.650
Ren, Qingyi
So yeah. Yeah, Google.

0:22:35.190 --> 0:22:37.400
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, Amazon, IBM.

0:22:39.590 --> 0:22:40.230
Mönch, Jelena Johanna Rosemarie Gertraud
So crazy.

0:22:38.260 --> 0:22:45.380
Ren, Qingyi
Ohh yeah yeah, Google do not recognize gender, but Google has something like a your violence number.

0:22:46.320 --> 0:22:46.760
Mönch, Jelena Johanna Rosemarie Gertraud
What?

0:22:47.200 --> 0:22:47.520
Ren, Qingyi
Yeah.

0:22:48.430 --> 0:22:51.160
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I think Google even made a statement about it.

0:22:51.170 --> 0:22:54.560
Mönch, Jelena Johanna Rosemarie Gertraud
I think they had it and then they were like ohh, you can't see Gender.

0:22:54.570 --> 0:22:55.970
Mönch, Jelena Johanna Rosemarie Gertraud
So we are putting this out.

0:22:55.980 --> 0:22:58.40
Mönch, Jelena Johanna Rosemarie Gertraud
We're not gonna have this service anymore.

0:22:58.210 --> 0:22:58.430
Ren, Qingyi
Yeah.

0:22:58.50 --> 0:23:0.630
Mönch, Jelena Johanna Rosemarie Gertraud
And I was like, wow, didn't expect you to do that.

0:23:1.210 --> 0:23:1.390
Ren, Qingyi
Yeah.

0:23:2.720 --> 0:23:4.30
Mönch, Jelena Johanna Rosemarie Gertraud
But yeah, everyone else has that.

0:23:4.40 --> 0:23:4.950
Mönch, Jelena Johanna Rosemarie Gertraud
So I don't know.

0:23:5.430 --> 0:23:5.560
Ren, Qingyi
Yeah.

0:23:5.140 --> 0:23:6.690
Mönch, Jelena Johanna Rosemarie Gertraud
And also there's not really restrictions.

0:23:6.700 --> 0:23:11.350
Mönch, Jelena Johanna Rosemarie Gertraud
So I think it's a bit crazy that this is like something that nobody really talks about for a while.

0:23:12.70 --> 0:23:12.360
Ren, Qingyi
Umm.

0:23:12.410 --> 0:23:12.910
Mönch, Jelena Johanna Rosemarie Gertraud
Weird!

0:23:18.300 --> 0:23:18.500
Ren, Qingyi
Yeah.

0:23:13.650 --> 0:23:23.970
Mönch, Jelena Johanna Rosemarie Gertraud
Umm yeah, I think I don't have to ask you why you choose the topic of gender to be honest, but and you also explained why you used the computer vision as a topic.

0:23:24.260 --> 0:23:24.640
Ren, Qingyi
Right.

0:23:24.190 --> 0:23:31.90
Mönch, Jelena Johanna Rosemarie Gertraud
But perhaps I guess I already know, but just to make you say it again, what is the origin of the name of your project?

0:23:31.900 --> 0:23:37.370
Ren, Qingyi
It's the origin name is just „see my gender“ and never changed this name.

0:23:38.40 --> 0:23:38.270
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:23:37.720 --> 0:23:45.830
Ren, Qingyi
Yeah, but from like I mentioned from this project and I told you there is no 100% male or female.

0:23:46.400 --> 0:23:46.580
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:23:45.840 --> 0:23:53.70
Ren, Qingyi
I did a lot of performance and so so I kind of the conclude with we are all in between.

0:23:53.220 --> 0:23:56.10
Ren, Qingyi
So my second project name is „inbetween“.

0:23:57.550 --> 0:23:57.920
Ren, Qingyi
Yeah.

0:23:56.740 --> 0:23:57.930
Mönch, Jelena Johanna Rosemarie Gertraud
Ah, OK.

0:23:58.400 --> 0:24:9.130
Ren, Qingyi
Yeah, the second project is more focused on the database like how because I work with the whole database be classified and how what kind of people are are doing the the processing are noting thing this this data. That's the thing I was working with and for the second project I training on machine learning program and that's and the data is comes from the performance I did.

0:24:25.120 --> 0:24:25.600
Mönch, Jelena Johanna Rosemarie Gertraud
That's cool.

0:24:24.240 --> 0:24:51.840
Ren, Qingyi
So it's include the 100 image of different number of my of my of my face be recognized as Amazon from the Amazon recognition and they use this training program and this program can random generated and like random number of my gender kind of make my digital gender be performing performative and the fluid dashboard.

0:24:52.240 --> 0:24:52.490
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:24:52.880 --> 0:24:53.210
Ren, Qingyi
Yeah.

0:24:53.220 --> 0:24:56.390
Ren, Qingyi
So it's kind of linked this to project.

0:24:56.340 --> 0:24:57.610
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm. Yeah.

0:24:56.440 --> 0:24:58.240
Ren, Qingyi
So the name is link, that's yeah.

0:24:59.180 --> 0:25:0.510
Mönch, Jelena Johanna Rosemarie Gertraud
OK, now I see. I didn't.

0:25:0.520 --> 0:25:14.130
Mönch, Jelena Johanna Rosemarie Gertraud
I didn't know that I I already noted down both projects because I had the feeling that they are from your website as well that they are linked, but I wasn't really sure about it yet and but just like what is the reason of why you chose the title „See my gender“?

0:25:16.440 --> 0:25:23.250
Ren, Qingyi
Ohh yeah, cause uh the the the beginning. I work with the project I got.

0:25:27.720 --> 0:25:27.950
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:25:25.10 --> 0:25:32.350
Ren, Qingyi
I know it's gonna be a performance, so if it's a performance and and my major was interaction design.

0:25:35.660 --> 0:25:35.930
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:25:32.360 --> 0:25:42.990
Ren, Qingyi
So we concerned about the audience a lot from the interaction design, so I have to think about what kind of experience I wanna bring to my audience.

0:25:43.120 --> 0:25:43.530
Ren, Qingyi
What?

0:25:43.620 --> 0:25:43.860
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:25:43.580 --> 0:25:46.190
Ren, Qingyi
So I wanted them see my gender.

0:25:47.260 --> 0:25:47.660
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:25:46.260 --> 0:25:59.680
Ren, Qingyi
But this gender is is double meaning is myself as how I behavior high performance myself and also it's also the the the the the result of the Amazon reaction.

0:26:9.550 --> 0:26:9.790
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:25:59.690 --> 0:26:16.120
Ren, Qingyi
So that's the way you see my gender and also the same agenda means how machine, same agenda, because that's whole project is explore how how my gender be recognized from the automatic general recognition. Yeah.

0:26:16.750 --> 0:26:20.160
Mönch, Jelena Johanna Rosemarie Gertraud
Or like try to be recognized because it's not really the right.

0:26:19.200 --> 0:26:21.490
Ren, Qingyi
And yeah, yeah.

0:26:20.170 --> 0:26:24.30
Mönch, Jelena Johanna Rosemarie Gertraud
It's trying on and on on different results all the time.

0:26:24.390 --> 0:26:25.330
Ren, Qingyi
Yeah.

0:26:25.520 --> 0:26:27.200
Mönch, Jelena Johanna Rosemarie Gertraud
It's a bit crazy.

0:26:25.590 --> 0:26:29.960
Ren, Qingyi
So the name kind of just really directly comes from.

0:26:29.740 --> 0:26:30.20
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:26:30.270 --> 0:26:32.820
Ren, Qingyi
Yeah, I didn't got really like a beautiful name.

0:26:33.900 --> 0:26:34.470
Mönch, Jelena Johanna Rosemarie Gertraud
No, I liked it.

0:26:32.830 --> 0:26:35.400
Ren, Qingyi
It's just directly I wanna see my gender.

0:26:35.450 --> 0:26:36.550
Ren, Qingyi
So see my gender.

0:26:37.410 --> 0:26:38.400
Mönch, Jelena Johanna Rosemarie Gertraud
No, I really like it.

0:26:44.930 --> 0:26:45.830
Ren, Qingyi
Umm.

0:26:38.410 --> 0:26:46.420
Mönch, Jelena Johanna Rosemarie Gertraud
I actually thought that you might have this background of using it because of computer vision seeing your gender, but I wasn't.

0:26:52.380 --> 0:26:52.640
Ren, Qingyi
Umm.

0:26:46.430 --> 0:26:54.250
Mönch, Jelena Johanna Rosemarie Gertraud
I didn't know that also about the audience and I didn't really know that you were also doing a lot of performances, so that was really something that didn't think about yet.

0:26:55.820 --> 0:26:59.980
Mönch, Jelena Johanna Rosemarie Gertraud
Next question is what were key development steps of your project?

0:27:2.10 --> 0:27:2.430
Ren, Qingyi
What's this?

0:27:6.390 --> 0:27:7.210
Ren, Qingyi
Ah.

0:27:2.240 --> 0:27:8.30
Mönch, Jelena Johanna Rosemarie Gertraud
Like like the umm like the steps that you did to not with the result.

0:27:11.430 --> 0:27:13.520
Ren, Qingyi
Mm-hmm. Yeah.

0:27:8.40 --> 0:27:16.810
Mönch, Jelena Johanna Rosemarie Gertraud
I know for the performance it probably wasn't like that much because it was probably also a lot of trying out and try and error. But like how did you start?

0:27:16.820 --> 0:27:17.120
Mönch, Jelena Johanna Rosemarie Gertraud
What did?

0:27:21.460 --> 0:27:21.710
Ren, Qingyi
Mm-hmm.

0:27:17.130 --> 0:27:22.220
Mönch, Jelena Johanna Rosemarie Gertraud
What was the first step and what were key steps in between and what was kind of the end?

0:27:30.920 --> 0:27:31.220
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:27:22.810 --> 0:27:31.880
Ren, Qingyi
Yeah, uuuhm, at my first the performance idea comes from my cover, my face, and I will be be be missed.

0:27:32.230 --> 0:27:34.20
Ren, Qingyi
And I found this quite interesting.

0:27:34.30 --> 0:27:41.370
Ren, Qingyi
And then try different different platform is basically all working like if I cover it, it works.

0:27:41.370 --> 0:27:41.650
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:27:48.130 --> 0:27:48.440
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:28:25.670 --> 0:28:25.970
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:27:41.530 --> 0:28:26.70
Ren, Qingyi
So and I actually did the same thing which which which what you did like you doing you performance but but I did it kind of differently I I I tried to use the the the clay the to to to cover some to make my face like bigger also make this part higher but and and like the facial recognition recognize me so I wanna to find the special point or something can make

the machine totally change my my my the there their result that's the first idea but actually I felt because it's influenced a lot by the angle but also by the light.

0:28:26.420 --> 0:28:26.650
Ren, Qingyi
Yeah.

0:28:26.660 --> 0:28:26.990
Ren, Qingyi
Yeah.

0:28:27.0 --> 0:28:28.430
Ren, Qingyi
So I cannot really.

0:28:28.660 --> 0:28:34.360
Ren, Qingyi
Ideally I wanna find like maybe a part of here F covered.

0:28:32.30 --> 0:28:35.290
Mönch, Jelena Johanna Rosemarie Gertraud
This one point and then I'm supposed to see my, yeah.

0:28:34.550 --> 0:28:38.480
Ren, Qingyi
Yeah, actually for if for image it works.

0:28:39.930 --> 0:28:40.80
Mönch, Jelena Johanna Rosemarie Gertraud
Really.

0:28:38.810 --> 0:28:46.440
Ren, Qingyi
Yeah, yeah, I cover certain pleasure of image, but for active like on live in performance is not work as well.

0:28:46.690 --> 0:28:52.380
Ren, Qingyi
So I decided to to open this like to do random performance.

0:28:52.510 --> 0:28:54.860
Ren, Qingyi
So this I think I cannot see a really key development, but also I I learned a lot during I do the performance.

0:29:0.810 --> 0:29:7.950
Ren, Qingyi
I have a file that I put different thing and I take take photo and I got the result.

0:29:7.960 --> 0:29:10.760
Ren, Qingyi
So I put it in the file, so I got a different kind of.

0:29:11.220 --> 0:29:11.540
Ren, Qingyi
Yeah.

0:29:11.550 --> 0:29:11.770
Ren, Qingyi
Yeah.

0:29:11.780 --> 0:29:12.700
Ren, Qingyi
So it's it's kind of.

0:29:12.710 --> 0:29:13.740
Mönch, Jelena Johanna Rosemarie Gertraud
Yes, I did this too.

0:29:13.770 --> 0:29:14.480
Ren, Qingyi
Yeah.

0:29:14.590 --> 0:29:53.570
Ren, Qingyi
And also it's easy important for me because I was have, uh, a problem is I am not from the gender study like the sociology background and also I am not from the computer science background as well. As a artist how I should work with with with facial recognition and I was really struggling with this question. Like what's what's kind of thing will give me like the power to see something with this software I'm not the engineer I'm not the the scientist to tell you something like that.

0:29:53.620 --> 0:29:56.330
Ren, Qingyi
So during this process I use the art history.

0:29:57.770 --> 0:29:58.110
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:29:57.40 --> 0:29:58.870
Ren, Qingyi
Like to working with this.

0:29:59.320 --> 0:29:59.940
Ren, Qingyi
Yeah.

0:29:59.950 --> 0:30:5.370
Ren, Qingyi
So that's is important for my future working as well for this project as well.

0:30:5.970 --> 0:30:6.470
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:30:5.420 --> 0:30:12.130
Ren, Qingyi
I've found how artistic can work with different issue you are you are you are caring about.

0:30:13.440 --> 0:30:14.40
Mönch, Jelena Johanna Rosemarie Gertraud
Aaah!

0:30:15.780 --> 0:30:16.310
Mönch, Jelena Johanna Rosemarie Gertraud
Interesting.

0:30:16.320 --> 0:30:30.160
Mönch, Jelena Johanna Rosemarie Gertraud
I didn’t, I didn't think of that approach and my approach is really different, but it's really nice to hear that as well. I think one of the when I saw your performance, one thing that really made a change directly was like when you put makeup.

0:30:30.710 --> 0:30:31.790
Ren, Qingyi
Yeah. Yeah.

0:30:31.910 --> 0:30:43.470
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, that's also something that I read about a lot that it's like, yeah, a gender stereotypical recognition as well, that if you wear makeup not like everywhere.

0:30:43.480 --> 0:30:52.460
Mönch, Jelena Johanna Rosemarie Gertraud
But like if if you wear makeup like we know it as a society from woman wearing it that then general recognition is gonna be like, yeah, you're female.

0:30:53.790 --> 0:30:54.790
Ren, Qingyi
Yeah, yeah, yeah.

0:30:54.890 --> 0:30:57.730
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, it's a bit weird, but that's the only thing I was like.

0:30:57.740 --> 0:30:59.630
Mönch, Jelena Johanna Rosemarie Gertraud
Umm, OK, that makes a lot of sense.

0:31:5.760 --> 0:31:5.980
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:30:56.380 --> 0:31:11.820
Ren, Qingyi
And and also and I'm sorry that is is work with intersectionality like like also for the for the Chinese software it's recognized me better than the Western contacts software.

0:31:12.370 --> 0:31:14.90
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, it probably because of like.

0:31:13.70 --> 0:31:15.180
Ren, Qingyi
Yeah, yeah, yeah.

0:31:15.190 --> 0:31:17.470
Ren, Qingyi
So the the database being influenced from what's going on. Umm.

0:31:20.190 --> 0:31:21.880
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, like with the gender shader.

0:31:22.350 --> 0:31:24.290
Mönch, Jelena Johanna Rosemarie Gertraud
But they also talk about that a lot, right?

0:31:24.620 --> 0:31:25.360
Ren, Qingyi
Yeah, yeah.

0:31:26.810 --> 0:31:27.150
Ren, Qingyi
Umm.

0:31:26.150 --> 0:31:28.970
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, it’s really bad.

0:31:28.980 --> 0:31:30.800
Mönch, Jelena Johanna Rosemarie Gertraud
Actually, a friend of mine, we did, we did an exhibition also together with Manuela and I was exhibiting my work, and we had a person who is a BIPOC person who was like leading us through all of it and was like our go to person to talk to and my system or like my Miguel system was working with him, but from another person who also was using some sort of face detection.

0:32:0.230 --> 0:32:6.940
Mönch, Jelena Johanna Rosemarie Gertraud
Which was saying if you if you it was saying if you look at something, if your eyes are open like it would say yes.

0:32:6.950 --> 0:32:13.910
Mönch, Jelena Johanna Rosemarie Gertraud
And if you're looking somewhere else, it would say no, it was just like an interactive part of her installation won't work with him.

0:32:16.140 --> 0:32:20.790
Mönch, Jelena Johanna Rosemarie Gertraud
That was really like we were like, wow, that's racism right there.

0:32:22.720 --> 0:32:23.540
Ren, Qingyi
Yeah, yeah.

0:32:20.840 --> 0:32:23.730
Mönch, Jelena Johanna Rosemarie Gertraud
That's everything we talked about and it's reality.

0:32:24.80 --> 0:32:27.150
Mönch, Jelena Johanna Rosemarie Gertraud
Need to look for a different algorithm like what the heck?

0:32:27.160 --> 0:32:27.730
Mönch, Jelena Johanna Rosemarie Gertraud
That's really bad.

0:32:28.490 --> 0:32:30.450
Ren, Qingyi
Yeah, yeah.

0:32:28.650 --> 0:32:31.720
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, that was really crazy.

0:32:31.730 --> 0:32:33.780
Mönch, Jelena Johanna Rosemarie Gertraud
We're like ohh, good to know.

0:32:34.440 --> 0:32:34.650
Ren, Qingyi
Yeah.

0:32:36.410 --> 0:32:37.280
Mönch, Jelena Johanna Rosemarie Gertraud
It's just crazy.

0:32:39.50 --> 0:32:39.600
Ren, Qingyi
Ohh.

0:32:41.200 --> 0:32:44.990
Mönch, Jelena Johanna Rosemarie Gertraud
Next questions where do you see limitations of your project?

0:32:45.820 --> 0:32:59.410
Ren, Qingyi
I always, yeah, I always have this problem because my PhD project now still focus on the uh, the gender, the gender in the AI application and also in the database.

0:32:59.620 --> 0:33:0.900
Ren, Qingyi
But I always have the problem is I do not have a size with your database.

0:33:5.160 --> 0:33:5.370
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:33:5.30 --> 0:33:12.190
Ren, Qingyi
OK, I work with with Amazon recognition, but I can only guess how they working with the database.

0:33:12.340 --> 0:33:12.570
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:33:12.330 --> 0:33:19.510
Ren, Qingyi
Or can research on the database you can get is open sources online, so that's the thing I think.

0:33:20.560 --> 0:33:21.890
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, it's not transparent at all.

0:33:20.590 --> 0:33:22.860
Ren, Qingyi
Umm, yes.

0:33:22.870 --> 0:33:26.910
Ren, Qingyi
And it's also also become the limited of my project.

0:33:26.920 --> 0:33:38.720
Ren, Qingyi
The thing I'm working is all from my perspective and I speculative how it works and I do not, I cannot really go to check what's going on with this software.

0:33:38.610 --> 0:33:38.830
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:33:39.610 --> 0:33:50.420
Ren, Qingyi
So I think it will in the future as we will become because now I'm working with the with the, with the natural language processing as well like the text based database.

0:33:50.950 --> 0:33:51.610
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh cool.

0:33:50.870 --> 0:33:53.380
Ren, Qingyi
Yeah, but I I work with the the the Deep L you know the translate.

0:33:56.600 --> 0:33:57.570
Mönch, Jelena Johanna Rosemarie Gertraud
I love DeepL!

0:33:58.80 --> 0:34:3.610
Ren, Qingyi
Yeah, but there's in in Chinese contact is do not have a homosexual.

0:34:5.250 --> 0:34:5.410
Mönch, Jelena Johanna Rosemarie Gertraud
What?

0:34:3.800 --> 0:34:8.580
Ren, Qingyi
If I put the Chinese homosexual, they will translate it to homophobia.

0:34:10.290 --> 0:34:10.570
Mönch, Jelena Johanna Rosemarie Gertraud
What?

0:34:12.130 --> 0:34:14.0
Ren, Qingyi
Yeah, yeah, yeah.

0:34:14.60 --> 0:34:15.190
Ren, Qingyi
So that's the thing I worked.

0:34:28.610 --> 0:34:28.820
Ren, Qingyi
Yeah.

0:34:35.510 --> 0:34:36.210
Ren, Qingyi
Yeah, yeah.

0:34:14.670 --> 0:34:40.170
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh, it doesn't work for me, but I mean also when I was using it all specific words about Gender Queerness and stuff like this, if it's not not homosexuality, that's that's OK in English, German but like also a lot of different verbs and like more queer specific language, they don't have it, but that's something they don't even have a normal text if you're just like, write my thesis.

0:34:40.440 --> 0:34:42.230
Mönch, Jelena Johanna Rosemarie Gertraud
They always say like this word doesn't exist.

0:34:42.240 --> 0:34:44.730
Mönch, Jelena Johanna Rosemarie Gertraud
And I'm like, yeah, it does, but you're just not educated.

0:34:45.160 --> 0:34:45.910
Ren, Qingyi
Yeah.

0:34:45.920 --> 0:34:46.410
Ren, Qingyi
Yeah.

0:34:46.700 --> 0:34:47.720
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, but crazy.

0:34:46.470 --> 0:34:52.510
Ren, Qingyi
So I really want to know know how their database looks like, but I have no access with them.

0:34:53.500 --> 0:34:53.740
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:34:52.560 --> 0:34:55.980
Ren, Qingyi
That's really limited my work a lot, so I can only guess.

0:34:55.980 --> 0:34:56.170
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:34:57.250 --> 0:34:59.100
Ren, Qingyi
Yeah, yeah, yeah, yeah.

0:34:58.800 --> 0:34:59.690
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I get that.
0:34:59.850 --> 0:35:3.110
Mönch, Jelena Johanna Rosemarie Gertraud
I think that's a quite common and big problem in general, right?

0:35:3.610 --> 0:35:3.960
Ren, Qingyi
Umm.

0:35:4.180 --> 0:35:8.50
Mönch, Jelena Johanna Rosemarie Gertraud
That that's like, not enough transparency at all.

0:35:8.710 --> 0:35:10.460
Ren, Qingyi
Yeah, yeah, true.

0:35:11.110 --> 0:35:18.280
Ren, Qingyi
And and also, uh, when they're doing this project actually wanna invite invite few person working together.

0:35:24.840 --> 0:35:25.120
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:35:18.290 --> 0:35:26.160
Ren, Qingyi
I want people with different uh identity and we're doing this performance together and actually I come up with a queer phase Database. Which is a 100 image with all my queer friend there. So it's uh and labeled by themselves. But I didn't publish some because of the ethical problem.

0:35:39.830 --> 0:35:40.90
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:35:39.850 --> 0:35:44.890
Ren, Qingyi
Like uh, if that published them, I don't know, people will use them to doing what?

0:35:45.750 --> 0:35:45.890
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:35:45.780 --> 0:35:46.500
Ren, Qingyi
Yeah.

0:35:46.560 --> 0:35:46.910
Ren, Qingyi
Yeah.

0:35:46.920 --> 0:35:53.900
Ren, Qingyi
So now somehow I start to writing about this doing writing paper about because I'm doing my Phd, so yeah.

0:35:51.580 --> 0:35:54.420
Mönch, Jelena Johanna Rosemarie Gertraud
Was that's really cool.

0:35:54.430 --> 0:35:58.470
Mönch, Jelena Johanna Rosemarie Gertraud
That’s a good I idea so at least you have some way of, yeah, making it public. But I think it's really good that you think about the misuse as well, because I think a lot of people just don’t.

0:36:5.840 --> 0:36:6.80
Ren, Qingyi
Yeah.

0:36:6.60 --> 0:36:6.790
Mönch, Jelena Johanna Rosemarie Gertraud
They just don’t think about the potential misuse that they create and I think yeah, a lot of people don't really see that concern in general.

0:36:13.690 --> 0:36:16.590
Ren, Qingyi
Yes, is yeah. So it's quite limited limitation, yeah.

0:36:22.20 --> 0:36:24.350
Mönch, Jelena Johanna Rosemarie Gertraud
Crazy about the deepL! I used it a lot actually. I even have an abo to use it and I have had problems with some parts of it as well, but I wonder why it's so much worse from I guess you translate from Chinese to English or what?

0:36:38.440 --> 0:36:39.730
Mönch, Jelena Johanna Rosemarie Gertraud
What way? Yeah.

0:36:43.480 --> 0:36:44.500
Mönch, Jelena Johanna Rosemarie Gertraud
Yes. Yeah.

0:36:38.530 --> 0:36:49.500
Ren, Qingyi
I thought the English to German were better because you have more ohh resources about the queer and gender in your cultural context.

0:36:49.870 --> 0:36:50.200
Ren, Qingyi
Yeah.

0:36:50.830 --> 0:36:51.210
Ren, Qingyi
Yeah.

0:36:51.880 --> 0:36:52.580
Mönch, Jelena Johanna Rosemarie Gertraud
It's still not good.

0:36:51.250 --> 0:36:53.450
Ren, Qingyi
And I need to get something, one minute.

0:36:54.120 --> 0:36:54.730
Mönch, Jelena Johanna Rosemarie Gertraud
OK, don't worry.

0:37:5.590 --> 0:37:6.110
Ren, Qingyi
Thank you.

0:37:7.80 --> 0:37:7.580
Mönch, Jelena Johanna Rosemarie Gertraud
No worries.

0:37:10.380 --> 0:37:26.110
Ren, Qingyi
Uh, so now for my PhD project, I I separate the the to three part because we the way we performance our gender online needs 3 way - text and image and video and also song.

0:37:26.520 --> 0:37:27.70
Ren, Qingyi
Yeah.

0:37:33.860 --> 0:37:34.280
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:37:27.120 --> 0:37:47.960
Ren, Qingyi
And this this kind of three material will will become three different database and will become three kind of main ai-application like chatbot and also the facial recognition that the about the computer vision and also for the the the the voice assistance.

0:37:48.940 --> 0:37:51.850
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh I did, I did some work on. I researched some work about chat bots but also a lot about voice assistance because of the crazy patriarchal background they're coming from.

0:37:59.730 --> 0:38:1.470
Ren, Qingyi
Yeah, yeah, yeah, yeah.

0:38:3.310 --> 0:38:3.790
Ren, Qingyi
Yeah.

0:38:1.340 --> 0:38:4.460
Mönch, Jelena Johanna Rosemarie Gertraud
I was like, my God, what is happening?

0:38:10.830 --> 0:38:11.510
Mönch, Jelena Johanna Rosemarie Gertraud
Hmm.

0:38:11.700 --> 0:38:12.100
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:38:12.110 --> 0:38:12.690
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, it is.

0:38:3.830 --> 0:38:13.420
Ren, Qingyi
Well, if you work hard, will form already a lot of person working with Voice Assistant, so it's a hard, great.

0:38:12.700 --> 0:38:14.840
Mönch, Jelena Johanna Rosemarie Gertraud
There's some really nice feministic projects, yeah.

0:38:14.480 --> 0:38:15.80
Ren, Qingyi
Yeah.

0:38:15.460 --> 0:38:17.740
Ren, Qingyi
Do you know the Meet Q, Meet Q?

0:38:18.940 --> 0:38:20.110
Mönch, Jelena Johanna Rosemarie Gertraud
No, I don't know this one.

0:38:20.920 --> 0:38:26.670
Ren, Qingyi
As a really amazing they use the different way to create it uuuhm on on gender natural voice assistant.

0:38:32.80 --> 0:38:33.20
Mönch, Jelena Johanna Rosemarie Gertraud
Oh, that's so cool.

0:38:34.50 --> 0:38:34.210
Ren, Qingyi
Yeah.

0:38:36.740 --> 0:38:37.510
Ren, Qingyi
Ohm.

0:38:38.690 --> 0:38:45.600
Mönch, Jelena Johanna Rosemarie Gertraud
I only I only looked at a lot of feminist approaches, which we talked to and critical data, but I didn't see anything like this.

0:38:47.780 --> 0:38:51.600
Ren, Qingyi
So I only found the YouTube link, but you can check it later.

0:38:52.550 --> 0:38:53.400
Mönch, Jelena Johanna Rosemarie Gertraud
Yes, I will! Thank you.

0:38:54.380 --> 0:38:55.90
Ren, Qingyi
No worries.

0:38:53.410 --> 0:38:55.590
Mönch, Jelena Johanna Rosemarie Gertraud
Thank you. Cool.

0:38:57.520 --> 0:39:1.730
Mönch, Jelena Johanna Rosemarie Gertraud
Next question, what we're exhibition visitors reaction.

0:39:2.20 --> 0:39:2.300
Ren, Qingyi
Ohh.

0:39:2.60 --> 0:39:11.680
Mönch, Jelena Johanna Rosemarie Gertraud
I mean in your case, I guess it's also a lot of online visitors, but I saw also that you had some exhibitions, so I thought perhaps you can just both of it and one answer.

0:39:11.590 --> 0:39:17.140
Ren, Qingyi
I did feel exhibition, but this was pandemic so I didn't go there in person. I did in the the grid also in in South Korea so and that's the pity. But when I do workshop, I communicate with the people a lot. And it's it's interesting. I feel most of the people, if they into the class, people come to the workshop, they kind of interested with the topic.

0:39:35.310 --> 0:39:35.560
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:39:35.950 --> 0:39:51.820
Ren, Qingyi
So the the most of the people, they agree that facial recognition is just something shouldn't exist. And the the people start, everyone's start to question me about the the software itself.

0:39:52.30 --> 0:39:52.210
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:39:52.710 --> 0:39:57.160
Ren, Qingyi
Also, they start to bring their own background to talking about this, this, this software.

0:40:7.230 --> 0:40:7.450
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:40:7.530 --> 0:40:18.20
Ren, Qingyi
Yeah this the good part! Cause make me think about.. Cause I can only think about it from my perspective. I have gender concern and nd I have the kind of asian face concern, but that other people maybe from their background they think about this differently.

0:40:19.310 --> 0:40:27.600
Ren, Qingyi
Yeah. So I think it's quite important for an artist to have the different voice around, yeah.

0:40:27.460 --> 0:40:28.510
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, yeah, I get that.

0:40:28.630 --> 0:40:29.500
Ren, Qingyi
Make me sad.

0:40:29.570 --> 0:40:37.400
Ren, Qingyi
Yeah, but otherwise this quite it's quite PTM. I didn't go as a lot of expansion in person to talk with in person to talk with people, yeah.

0:40:41.90 --> 0:40:46.80
Mönch, Jelena Johanna Rosemarie Gertraud
And when you did the online performance did you, did you have the chance to talk to people after that as well.

0:40:46.90 --> 0:40:47.490
Mönch, Jelena Johanna Rosemarie Gertraud
Or was it just like, yeah?

0:40:46.290 --> 0:40:49.550
Ren, Qingyi
Yeah, we we have Q&A question Uh, the time Q&A time.

0:40:51.510 --> 0:40:51.750
Mönch, Jelena Johanna Rosemarie Gertraud
Umm.

0:40:51.680 --> 0:40:53.450
Ren, Qingyi
Yeah, yeah, yeah.

0:40:53.600 --> 0:41:04.590
Ren, Qingyi
And people, most of the people they concerned about how this, how this technology works. So half of the time, actually I'm explain how it works.

0:41:4.440 --> 0:41:5.230
Mönch, Jelena Johanna Rosemarie Gertraud
Ah yeah.

0:41:5.180 --> 0:41:35.670
Ren, Qingyi
Yeah, that's and the only some people will give some feedback about their experience and also their concern like the woman, if they they if they if they have to cover with the with the with the I don't know how to call that you know the yeah just the like in their culture they have to cover their their face yeah like for them the how the facial recognition work with them.

0:41:37.510 --> 0:41:42.190
Mönch, Jelena Johanna Rosemarie Gertraud
They probably just don't work right?

0:41:37.510 --> 0:41:42.190
Mönch, Jelena Johanna Rosemarie Gertraud
Or like really bad.

0:41:42.910 --> 0:41:48.200
Ren, Qingyi
Yeah, yeah, yeah. So it's actually four different people with different issue.

0:41:48.900 --> 0:41:49.100
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:41:48.630 --> 0:41:50.220
Ren, Qingyi
Yeah. Umm.

0:41:50.660 --> 0:41:53.490
Mönch, Jelena Johanna Rosemarie Gertraud
I did not think about that perspective. Actually, I think it's really important.

0:41:54.140 --> 0:42:3.640
Ren, Qingyi
Yeah, it's really , really important. And actually, when you think about it, you have to really struggle. Struggle if it's not work, it is a good thing or bad thing.

0:42:4.920 --> 0:42:5.160
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:42:5.460 --> 0:42:11.390
Ren, Qingyi
Yeah, there is a like.. They do not want to be recognized and this not work.

0:42:11.310 --> 0:42:11.530
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:42:12.20 --> 0:42:21.70
Ren, Qingyi
Then it's probably a good thing, but actually for a lot of like the software now, they can just recognize your eye to like to unlock your phone.

0:42:22.0 --> 0:42:22.420
Mönch, Jelena Johanna Rosemarie Gertraud
Ah.

0:42:21.620 --> 0:42:29.530
Ren, Qingyi
So I'm probably it's not a big problem, but it's good to think different people's perspective about it.

0:42:29.340 --> 0:42:29.910
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:42:29.970 --> 0:42:30.270
Ren, Qingyi
Yeah, yeah.

0:42:30.280 --> 0:42:45.220
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I think it's also really important, like you said, like do I want the visibility then probably if I'm in a minority, I have a big like a high visibility or if I don't or I don't have any, it's nothing between.

0:42:44.70 --> 0:42:46.420
Ren, Qingyi
Yeah.

0:42:45.230 --> 0:42:56.880
Mönch, Jelena Johanna Rosemarie Gertraud
It's probably like you either are focused on or you're not seen at all, and whatever might have some benefits, but both of it also has a lot of like negativity.

0:42:57.520 --> 0:42:58.390
Ren, Qingyi
Yeah, yeah.

0:42:58.710 --> 0:43:1.140
Mönch, Jelena Johanna Rosemarie Gertraud
You know, you're not like you're not the norm. Then you probably stick out or you're invisible.

0:43:4.410 --> 0:43:4.680
Ren, Qingyi
Umm.

0:43:5.810 --> 0:43:13.820
Mönch, Jelena Johanna Rosemarie Gertraud
I think the.. It kind of makes this problem bigger with like all this computer vision. I think.

0:43:13.460 --> 0:43:15.80
Ren, Qingyi
Yeah, that's true. Yeah.

0:43:16.10 --> 0:43:24.810
Mönch, Jelena Johanna Rosemarie Gertraud
It’s crazy. That's also always like the the the point like do we want to be recognized or not? Do we really need this software in general?

0:43:25.390 --> 0:43:25.590
Ren, Qingyi
Yeah.

0:43:26.420 --> 0:43:26.860
Mönch, Jelena Johanna Rosemarie Gertraud
For what?

0:43:29.220 --> 0:43:29.530
Mönch, Jelena Johanna Rosemarie Gertraud
I don’t.

0:43:28.840 --> 0:43:40.590
Ren, Qingyi
And do you do you know the the Europe has now from this year June have the first AI act? Uh, have you ever read about it, AI?

0:43:40.380 --> 0:43:48.240
Mönch, Jelena Johanna Rosemarie Gertraud
I didn't read it, but I think again, please send it in the chat as well. Manuela talked in a in her lecture about it.

0:43:48.630 --> 0:43:48.850
Ren, Qingyi
Yeah.

0:43:48.690 --> 0:43:57.750
Mönch, Jelena Johanna Rosemarie Gertraud
And I knew that there was like a big a big discussion about AI-ethics and how to do it in Europe and stuff.

0:43:57.840 --> 0:43:58.70
Ren, Qingyi
Umm.

0:43:57.950 --> 0:44:3.20
Mönch, Jelena Johanna Rosemarie Gertraud
I think it's really important, but also and I don't, I don't wanna expect too much.

0:44:3.740 --> 0:44:7.610
Ren, Qingyi
Yeah, I think you can quickly go through it.

0:44:8.140 --> 0:44:8.340
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:44:7.620 --> 0:44:11.350
Ren, Qingyi
I think it's good from a queer perspective to looking about it.

0:44:11.690 --> 0:44:11.910
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:44:11.360 --> 0:44:20.50
Ren, Qingyi
It is different from the like… Because it's actually mentioned about the gender equality a lot. Really a lot.

0:44:20.770 --> 0:44:21.40
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:44:20.300 --> 0:44:24.250
Ren, Qingyi
But they emphasize male and female a lot at the same time.

0:44:25.310 --> 0:44:25.660
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:44:24.930 --> 0:44:47.320
Ren, Qingyi
So there is no diverse gender option. Yeah. But because when it comes to the AI they they are ethical, problem is concerned about the personal data for the biometric information. So it's concerned like female male and how to behave with female. There's no diversity option, so I think, yeah.

0:44:47.230 --> 0:44:50.690
Mönch, Jelena Johanna Rosemarie Gertraud
Uh, it's like starting at the wrong end. A little bit is it?

0:44:51.80 --> 0:44:52.210
Ren, Qingyi
Yeah, yeah, yeah, yeah.

0:44:53.360 --> 0:44:55.550
Mönch, Jelena Johanna Rosemarie Gertraud
But I think that's that's the general problem.

0:44:55.790 --> 0:44:57.400
Ren, Qingyi
Yeah. Umm.

0:44:55.910 --> 0:45:5.30
Mönch, Jelena Johanna Rosemarie Gertraud
But yeah, but that actually really leads great to to the next question. What is your political stance on facial recognition services?

0:45:6.670 --> 0:45:13.940
Ren, Qingyi
I just generally think I I think this thing do not need to be exist. So. Yeah.

0:45:13.420 --> 0:45:14.620
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, right. I think so too.

0:45:14.430 --> 0:45:23.470
Ren, Qingyi
Yeah, yeah, yeah. But it's hard to really… It's really hard to to set for make the system disappear.

0:45:23.270 --> 0:45:23.470
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:45:22.930 --> 0:46:13.620
Ren, Qingyi
Yeah, but also like I same time like we talk, we do not wanna be be be recognized people as transgender or as non-binary. It's still meaningless. So I think think I think for this question is more from a designer perspective. When you design a software, why you use this function? Like if people have to be recognized the why they have to the gender also age and also from their race- why they have to be recognized and what we gonna really use this facial recognition for. That's the question. Maybe can think about, but yeah, yeah, but technically I just it's shit.

0:46:14.520 --> 0:46:14.780
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:46:13.670 --> 0:46:16.380
Ren, Qingyi
So we just, we don't need that.

0:46:17.30 --> 0:46:18.660
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I think so too.

0:46:18.790 --> 0:46:38.540
Mönch, Jelena Johanna Rosemarie Gertraud
I just wanted to hear from you as well, because I know there's a lot of people who also like.. I mean it's also also some possibilities but possibilities in comparison to of the potential misuse and also of not using it without all these questions of like why am I using this? What for am I using this?

0:46:43.610 --> 0:46:43.770
Ren, Qingyi
Yeah.

0:46:38.610 --> 0:47:37.150
Mönch, Jelena Johanna Rosemarie Gertraud
What kind of system or concept is this even like following. And I think a lot of people don't

ask these questions and then I don't know. I think it's a bit funny because they have the feeling that there's kind of thinking of we use this new technology to validate/verify or like do these things that we've always done is something that has repeated throughout history so many times alread. With like ohh, we're just gonna like scale people heads and try to make some scientific stuff about what race they might or of photographs of the same thing. Now it's happens with automatic generate cognition in AI and I'm like well yes it's the same thing like always is it. That's what it's funny to see it from like a holistic view and see like ohh it's just repeating throughout history and there we are again. I don't know.

0:47:36.630 --> 0:48:11.970
Ren, Qingyi
And also you know in in China I told you like five years ago we started using the face to pay. Now is not popular thing anymore. They start to use scan your hand to pay. But it's quite interesting like they take few years, seems like a step by step to get all your information. And then in China has a large population. Population means data and the data means the AI can go well. I think that's another reason reason the artificial in China artificial intelligence in China can develop well.

0:48:12.990 --> 0:48:13.220
Mönch, Jelena Johanna Rosemarie Gertraud
Mm-hmm.

0:48:12.790 --> 0:48:23.360
Ren, Qingyi
And also I actually read about the policy in China as well. There is a typical one is your personal information do not means your personal privacy.

0:48:25.250 --> 0:48:25.660
Mönch, Jelena Johanna Rosemarie Gertraud
Ohh.

0:48:23.810 --> 0:48:37.80
Ren, Qingyi
So the thing like your face information is your information, is not your privacy. So from the from the the policies that they try to blur the boundary of what's what's is your privacy.

0:48:39.490 --> 0:48:39.810
Ren, Qingyi
Yeah.

0:48:38.350 --> 0:48:40.230
Mönch, Jelena Johanna Rosemarie Gertraud
That sounds crazy.

0:48:41.730 --> 0:48:42.270
Mönch, Jelena Johanna Rosemarie Gertraud
Oh, God.

0:48:42.850 --> 0:48:43.20
Ren, Qingyi
Yeah.

0:48:54.260 --> 0:48:54.520
Ren, Qingyi
Yeah.

0:48:44.470 --> 0:48:56.790
Mönch, Jelena Johanna Rosemarie Gertraud
And also like all this biometric data now like if you started playing with your face and now you're doing it with your hands scans, imagine how much data that is and..

0:48:55.500 --> 0:48:57.750
Ren, Qingyi
Yeah.

0:48:58.480 --> 0:48:59.50
Mönch, Jelena Johanna Rosemarie Gertraud
Oh my God.

0:49:1.600 --> 0:49:1.940
Ren, Qingyi
Umm.

0:49:1.950 --> 0:49:3.380
Mönch, Jelena Johanna Rosemarie Gertraud
That's crazy.

0:49:5.410 --> 0:49:5.640
Ren, Qingyi
Yeah.

0:49:4.190 --> 0:49:8.650
Mönch, Jelena Johanna Rosemarie Gertraud
Last question, what is your opinion on automatic gender recognition systems?

0:49:9.810 --> 0:49:13.790
Ren, Qingyi
Aah the the the the system itself is ridiculous. It's just a joke.

0:49:13.940 --> 0:49:17.400
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah. I think so too, but yeah.

0:49:18.70 --> 0:49:25.170
Ren, Qingyi
Yeah! Yeah, the, the the concept itself is the gender is not being recognized as a personal statement.

0:49:26.30 --> 0:49:26.230
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:49:26.220 --> 0:49:39.680
Ren, Qingyi

If something can be a third person, tell you who you are, what you what kind of gender you are. So it's itself from the basic gender study perspective, it's just a joke.

0:49:40.740 --> 0:49:40.890
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:49:41.560 --> 0:49:58.420
Ren, Qingyi
Yeah, so, so, so actually I did a research about this as well. There is a gap between the the gender study and scholar. They were working really hard and really wrote a book and some something like, but people who work with computer science, they don't know and they don't care.

0:49:59.460 --> 0:49:59.680
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:49:59.700 --> 0:50:16.410
Ren, Qingyi
Yeah. So I think yeah. So that's my perspective. I think itself is from the original concept it has problem. So, so from the other it goes wrong, wrong. And three years ago, I was in a JKU for for the-

0:50:16.60 --> 0:50:16.700
Mönch, Jelena Johanna Rosemarie Gertraud
Ah yeah.

0:50:16.720 --> 0:50:17.10
Ren, Qingyi
Yeah.

0:50:19.170 --> 0:50:20.750
Mönch, Jelena Johanna Rosemarie Gertraud
Uh, yeah, I was there too. Nice.

0:50:17.20 --> 0:51:11.110
Ren, Qingyi
-for the festival university. For the first generation festival universe, and we were having a workshop with the people from.. with a lecture from the Computer science department and that he will explain some technology saying to our group. And he said on the the the gender is definitely binary is just binary in my class. If you do not agree, you can leave. But in my class gender is binary. And he is a person who, teaching back troller, computer science. So I actually emailed a lots of JKU but I got no reply with.. JKU told me that every every professor like start their career career in in JKU they have to do a series of lecture, they have to learn about this gender diversity as well.

0:51:11.400 --> 0:51:12.130
Ren, Qingyi
But from there-

0:51:11.300 --> 0:51:12.640
Mönch, Jelena Johanna Rosemarie Gertraud
Yes, yes, yes, the have it.

0:51:13.110 --> 0:51:16.410
Ren, Qingyi
Yeah. Well, the from their behaviors, not at all.

0:51:16.950 --> 0:51:18.750
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, yeah, I I actually did-

0:51:19.660 --> 0:51:25.80
Ren, Qingyi
Sorry, the people who are educating the next generation, no is just like that.

0:51:26.280 --> 0:51:36.460
Mönch, Jelena Johanna Rosemarie Gertraud
It's really sad, but I I am. I did gender studies causes from Kunst-University, who are placed in JKU and it was like just taking place there.

0:51:34.90 --> 0:51:34.630
Ren, Qingyi
Alright.

0:51:36.470 --> 0:51:41.470
Mönch, Jelena Johanna Rosemarie Gertraud
And there's also some people joining from JKU, but not that many to be honest.

0:51:51.820 --> 0:51:52.100
Ren, Qingyi
Umm.

0:51:41.480 --> 0:52:28.20
Mönch, Jelena Johanna Rosemarie Gertraud
And my lecturer also talked to me about or to us about this because they said like there is this lecture thing going on in JU where they, where people have to go there just to like have this basic education. And he actually told us that they're trying to get rid of it, that the students don't want it. I also got told that it's not the best lecture, but like they really want to not do it and something that I think, JKU, I think there's like a whole thing about where they're like, noooo, we're not doing this shit. Which I think is ridiculous because it's such a good starting point to be like have the let's have this basic thing just to talk about.

0:52:28.200 --> 0:52:28.610
Ren, Qingyi
Hmm. Yeah. Yeah.

0:52:28.30 --> 0:53:4.350
Mönch, Jelena Johanna Rosemarie Gertraud
So everyone feels a little bit more included and just like it's not also, it's also not that much of a big lecture. And I think especially for like science, science fixture things, that's really important to have this crossover, but also my brother also studies uh bio engineering and yet the same he had the he had to choose some sort of intersection with other sociology,

sociology, ah you know what I mean because it's really important to have this other view as well. And he was also complaining about gender studies and that everyone doesn't want to do it.

0:53:10.330 --> 0:53:10.570
Ren, Qingyi
Yeah.

0:53:4.360 --> 0:53:30.510
Mönch, Jelena Johanna Rosemarie Gertraud
And I think that's I think that's a that's a thing. Which is really sad, to see that perspective also from different countries and from other from different people that so many people really don't want to be educated about it. But I think it just reflects how much insecurity is there about identity and gender in general in our society. Because I think it's nothing else than being insecure, to be honest.

0:53:30.910 --> 0:53:32.260
Ren, Qingyi
Yeah, exactly.

0:53:32.350 --> 0:53:32.880
Ren, Qingyi
Yeah.

0:53:33.940 --> 0:53:42.640
Mönch, Jelena Johanna Rosemarie Gertraud
I mean, if you would just be like a little bit interested and you don't see your whole identity being threatened about it, you probably wouldn't try to not make it existent anymore.

0:53:42.770 --> 0:53:43.70
Ren, Qingyi
Umm.

0:53:45.650 --> 0:53:45.860
Ren, Qingyi
Yeah.

0:53:43.180 --> 0:53:49.150
Mönch, Jelena Johanna Rosemarie Gertraud
He would just be like, Oh yeah, I don't really care about it, but that's not that position everyone has. Everyone is like we don't like it.

0:53:50.650 --> 0:53:51.460
Ren, Qingyi
Yeah, yeah.

0:53:49.160 --> 0:53:54.70
Mönch, Jelena Johanna Rosemarie Gertraud
We want it to go away and I don't think that's coming from „Oh I don't care about this“.

0:53:54.290 --> 0:53:56.460
Ren, Qingyi
Yeah, yeah, yeah. True.

0:53:55.880 --> 0:53:56.460
Mönch, Jelena Johanna Rosemarie Gertraud
It's crazy.

0:53:56.580 --> 0:53:57.100
Ren, Qingyi
True.

0:53:57.190 --> 0:53:57.810
Ren, Qingyi
Yeah.

0:53:58.150 --> 0:54:19.370
Ren, Qingyi
And the full especially for the deal with the, the, the, the machine version vision problem. They lack the the thing easy to be classified then then the the grid exists, the problem will be solved.
Like for the gender will be the first task we writing because it has it's binary and it's easy to be recognized.

0:54:19.470 --> 0:54:25.740
Ren, Qingyi
Yeah. So yeah, and so that's, that's where why those are the problem start for ads from the beginning, so it's all hard for us to working with.

0:54:28.370 --> 0:54:28.640
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah.

0:54:29.440 --> 0:54:42.20
Ren, Qingyi
Even have talked, we were talking about there is we do not have access with their database with how they working with so it's really hard to to reach the key point, yeah.

0:54:40.990 --> 0:54:41.510
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:54:56.100 --> 0:54:56.320
Ren, Qingyi
Yeah.

0:54:43.470 --> 0:55:5.480
Mönch, Jelena Johanna Rosemarie Gertraud
And still crazy that also when I was looking at different studies who were working with computer vision and like working on how automatic generic recognition is also like talked about in this area or like.. And most of them didn't even say that they would use the binary system, it would just be like we just use gender recognition.

0:55:8.20 --> 0:55:8.180
Ren, Qingyi
Yeah.

0:55:5.490 --> 0:55:12.710
Mönch, Jelena Johanna Rosemarie Gertraud
So that's like obvious that we choose this one, which I think is also like „What? What it's happening there?“ It's just crazy.

0:55:14.740 --> 0:55:14.860
Ren, Qingyi
Yeah.

0:55:14.530 --> 0:55:26.900
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah but funny that you had aaahm similar experience to me. It's really nice to to hear about that because yeah, in my in my group or also in my study program that did not happen.

0:55:25.450 --> 0:55:28.300
Ren, Qingyi
Umm, mmmh.

0:55:28.470 --> 0:55:36.620
Ren, Qingyi
If you, if you if you say someone working with a project, you may feel similar with, you can try to email them as well.

0:55:36.880 --> 0:55:37.100
Mönch, Jelena Johanna Rosemarie Gertraud
Uh-huh.

0:55:49.730 --> 0:55:49.890
Mönch, Jelena Johanna Rosemarie Gertraud
Yes.

0:55:36.930 --> 0:55:50.980
Ren, Qingyi
It's always good to to know someone, other people in the world have the same their concern with you are concerned with and you will have more motivated to really work with this project to make more access.

0:55:50.990 --> 0:55:52.350
Ren, Qingyi
Yeah, yeah, yeah, yeah.

0:55:52.470 --> 0:55:53.320
Mönch, Jelena Johanna Rosemarie Gertraud
That's really nice.
0:55:53.330 --> 0:55:58.480
Mönch, Jelena Johanna Rosemarie Gertraud
Yeah, I'm really happy that I got in contact with you because I didn't do that with anyone else yet.
0:55:59.30 --> 0:56:0.140
Ren, Qingyi
Ah, thank you.

0:56:3.210 --> 0:56:3.710
Ren, Qingyi
Yeah, yeah.

0:56:8.990 --> 0:56:9.220
Ren, Qingyi
Yeah.

0:55:58.990 --> 0:56:10.140
Mönch, Jelena Johanna Rosemarie Gertraud
And it's crazy that we have like all this similar opinions as well, because if I don't do a random person on the street, they will probably not not know what I'm talking about or be against it or both.

0:56:10.520 --> 0:56:10.950
Ren, Qingyi
Yeah.

0:56:10.270 --> 0:56:11.200
Mönch, Jelena Johanna Rosemarie Gertraud
Probably both actually.

0:56:11.280 --> 0:56:14.200
Ren, Qingyi
Yeah, yeah, yeah.

Unlearning Gender

Workshop in Collaboration with the Ars Electronica Festival

Jelena Mönch
Miguel Rangil
MA Interface Cultures

ARS ELECTRONICA
Art, Technology & Society

Appendix D

Gender, Sex and Identity

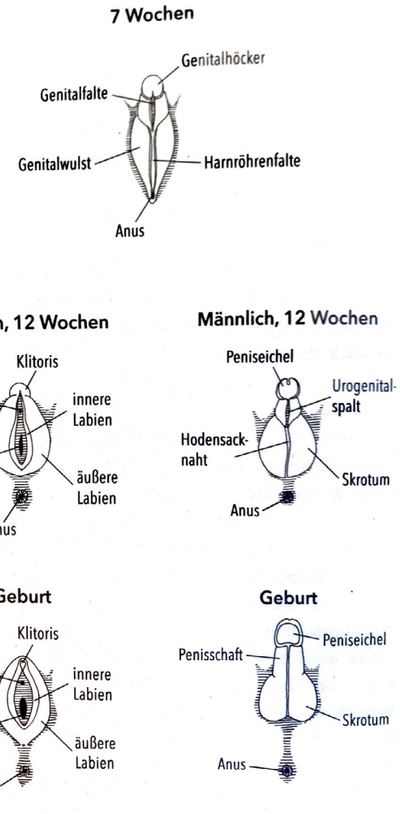
Presentation Content

- *Gender, Sex and Identity*
- *Gender as a social Construct*
- *Exiting Gender*
- *Technology as Manifestation*
- *Artistic Practices*
- *Our Proposal*
- *Bibliography*

Jelena Mönch/Miguel Rangil
Unlearning Gender - Workshop

Complexity of Gender

- *Biology as a tool for opression*
- *Biological essentialism*
- *Naturalistic arguments idealise and simplify nature*
- *Intersex make up to 1,7% of the population worldwide*
- *About 2% of the world population have green eyes*
- *Human behaviour - combination of cultural, sociological, biological, physiological factors*



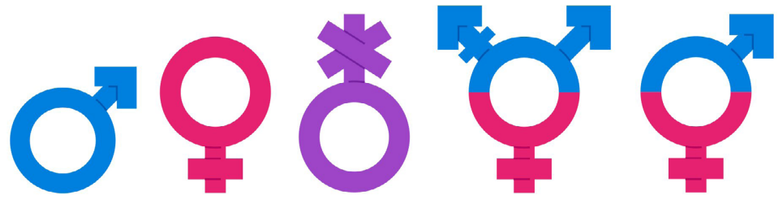
Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.
Nagoshi, E. (2017). Komm, wie du willst: Das neue Frauen-Sex-Buch.
Bergmann, F., Schößler, F., & Schrech, B. (2012). Gender Studies.
Voß, HJ. V. (2012). Intersexualität - Intersex, Eine Intervention. UNRAST-Verlag.

Jelena Mönch/Miguel Rangil
Unlearning Gender - Workshop

Gender Identities

- *Political identities presuppose gender*
- *Acceptance of frameworks that include structural violence*
- *Acceptance of gender as a natural, unquestionable category*
- *Letting go of gender as an identity*

-- *But they still help us to make ourselves visible in the present opressing social structure of gender!*



Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.

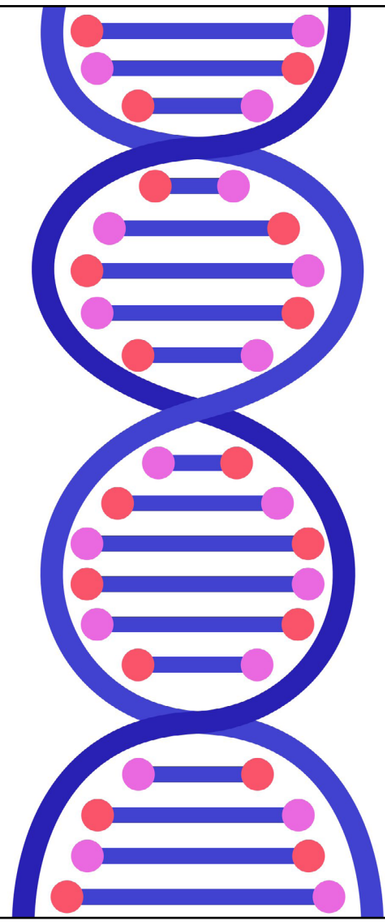
Conclusion

- *Sex and gender diversity is real!*
- *Social construct of binary gender system is not scientifically right*
- *Is there biological sex? - Yes, but it is not binary.*
- *Gender is fluid and performative*

Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.
Von Braun, C. (2005). Gender@Wissen: ein Handbuch der Gender-Theorien.

Scientific Bias

- *Chromosomes were misinterpreted*
- *Function manipulated to biologically and scientifically anchor binary gender order*
- *Poor evidence that Y chromosomes mark difference between male and female*
- *Y-chromosome is degraded in men as they age*
- *Biological sex is composed in a much more complex way*



Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.
Von Braun, C. (2005). Gender@Wissen: ein Handbuch der Gender-Theorien.

The Basics

- *Gender roles, gender identity, gender order—derived from anatomical differences*
- *BUT: According to biological facts sex is not a polarity but a continuum Invention of differences*
- *Genderdichotomy- effective social ideologies/constructions*
- *Socially produced through humanities and social science, political and philosophical discourses*

Bergmann, F., Schößler, F., & Schrenck, B. (2012). Gender Studies.
Voß, H.J. V. (2012). Intersexualität - Intersex, Eine Intervention. UNRAST-Verlag.
Von Braun, C. (2005). Gender@Wissen: ein Handbuch der

Gender as a social Construct

Disscusion

How and through what institutions is the system of gender enforced in our society?

A political Fiction

- *Gender = a political fiction (like race)*
- *Do not exist in the biological sense but in sociopolitical sense*
- *Has to be produced and maintained artificially (example Intersex)*
- *Social norm does not tolerate variation*
- *Form and maintain structures that are necessary for the effectiveness of the binary gender system*

Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.

Exit Gender

- *Form of intervention in structural violence*
- *Constructivist and power-critical concept*
- *Political movement away from gender*
- *Leaves logic of social identity*
- *Concept of action*
- *Two strategies for action:*
  Naming Exgendernism & Genderism

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Exiting Gender

Naming Genderism

- Perceive, name structures of violence

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Exgendering

- Acting that lets go of gender
- Exgendering people through perception, reading in, language
- Detach activities, behaviour and appearance from gender
- Giving up genderism
- No degendering (person is denied gender identity as only perceived through central discrimination)

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

How to?

- *Start with yourself*
- *When, where and how you create, invoke, accept, ascribe gender*
- *Observe yourself in perceiving and referring to people*
- *What do you use to determine gender in your perception of other people?*
- *When do you think you can see, hear or read gender?*
- *Share your own perceptions respectfully with others*
- *Be open to the perceptions and processes of others*

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Takes place at:

- *Argumentative level*
- *Perceptual level*
- *Level of communication and exchange*
- *NOT at the level of body symbols*

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Technology as Manifestation

Excersize 1

Write down descriptions of people around you using alternative categories and non-gendered perspectives.

Automated Visuality

- *Algorithmic condition of existence*
- *Visuality also affected by the operability of machines in ourlifes*
- ***How is the visuality affected by this condition?** Is the image, placed within this context, adevice for replicating visual power?*
- *Computer Vision as evidence of the existence of postcolonial computing*
- *Algorithms are trained on millions of images - reinforce image clichés*
- *What visual epistemes are embedded in the lines of code of the models?*

AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

Technology as Manifestation

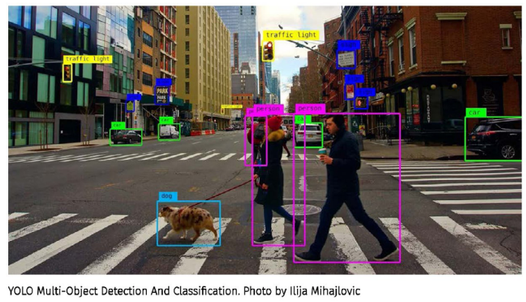
- *Biases in data: training set (word embedding), superviesed machine learning system, features, — historical discrimination*
- *Biases in design: algorithm development, data labeling, modeling*
- *Ai ecosystem bias: not enough diversity in the field of work of ai*

*-- **„Technology is social before it is technical“ by Deleuze***

AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

Addressing the Problem

- *CLASSIFICATION as how people are sorted into categories (dominant and naturalized categories)*
- *CLASSIFICATION refers to specific machine learning tasks*
- *Creating more resilient datasets through incorporation of diverse viewpoints and concerted efforts tominimize prejudice*

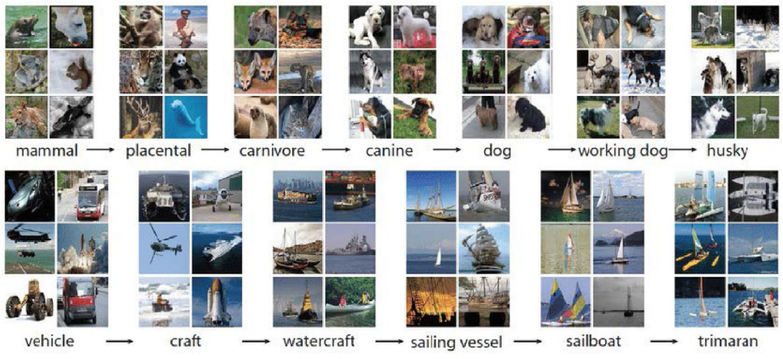


YOLO Multi-Object Detection And Classification. Photo by Ilija Mihajlovic

AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

Automated Visuality

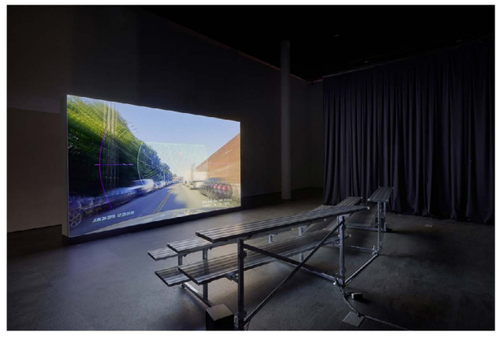
- *Turkers training ImageNet*
- *Predictive policing models like PredPol*
- *Computer vision models to identify people‘s sexual orientation through physiology*



AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

Distopian Worlds

- *Speculative practice: My blue window*
- *Dystopian fiction: Police algorithms prioritize patrolling marginalized and racialized neighborhoods*
- *Minority Report (2002)// PredPol algorithm*
- *Racial discriminations and asymmetries through predictive technologies embedded in organizations (police, healthcare systems etc.)*



My Blue Window, American Artist, 2015. Installation View,

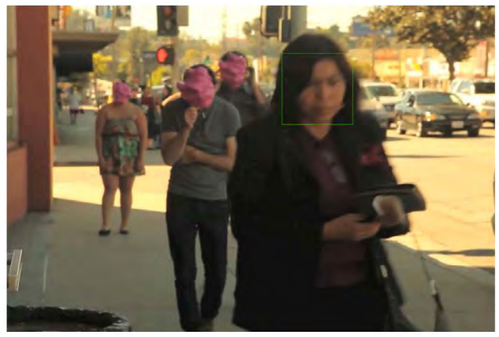
AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

Artistic Practices

Our Proposal

Fighting Back

- *Facial Weaponization Suite - Zach Blas (2012)*
- *Reverse the scheme, to counteract the narrative by creating unrecognizable „collective masks“*
- *Working with minorities and invisibilized collectives.*
- *Reveals the existence of inequality in data processing and analysis*
- *Shows biased programming (colonial, racist ,classist, homophobic, sexist)*
- *Simbolica-Poetical hacking*



Facial Weaponization Suite, Zach Blas, 2012

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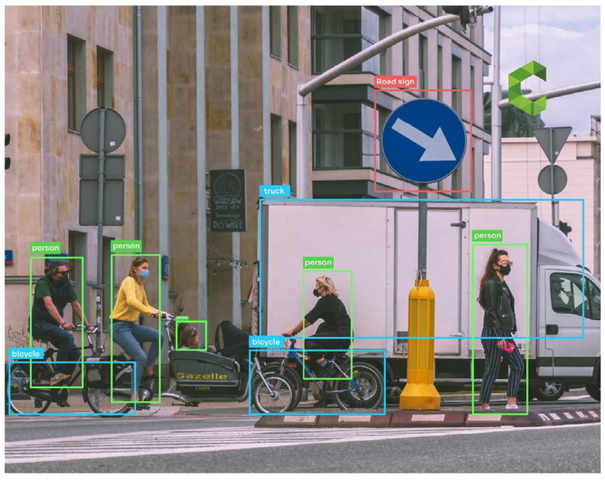
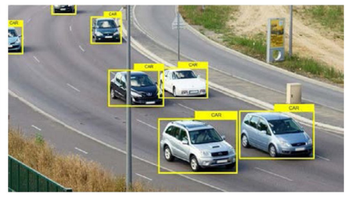
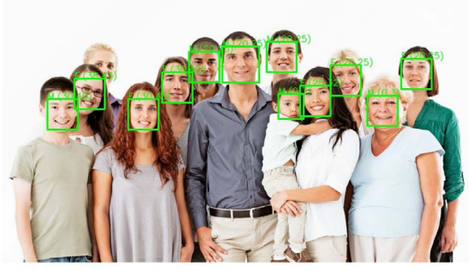
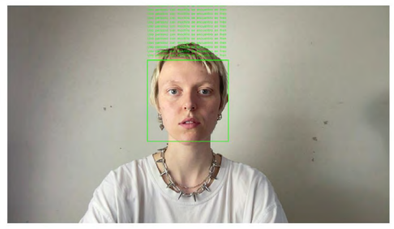
What kind of ***symbolic-poetic strategies*** *to escape binarygender categorization can we develop using a tool like* ***computer vision****?*

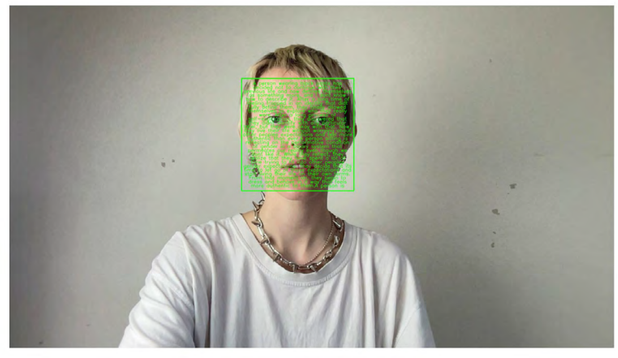
Computer Vision Aesthetics

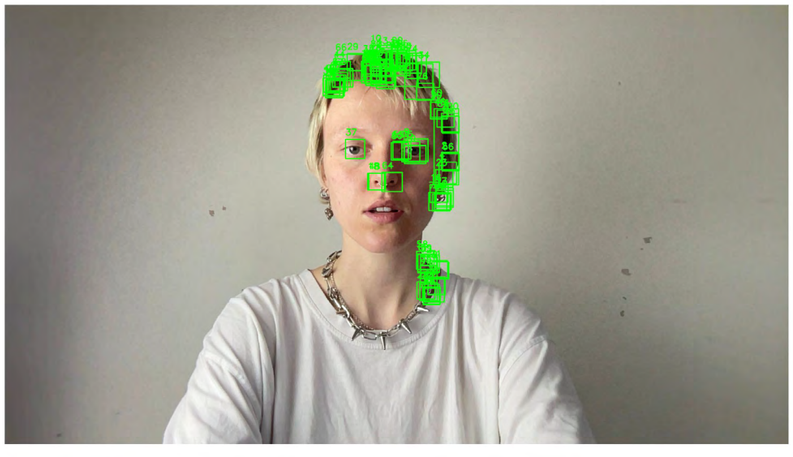


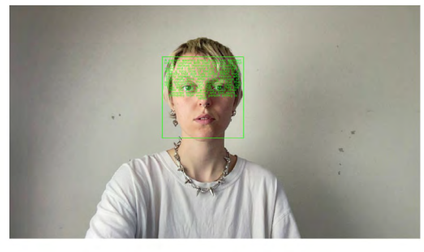












Unlearning Gender

- *Responds to binary gender categorization application of computer vision*
- *Questions social construct of gender*
- *Offers alternative ways of describing*
- *Critiques ascription in computer vision categorization*
- *Partly collective artwork (workshop)*

Bibliography

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Facial Weaponization Suite | Zach Blas. (2021, May 10). Zach Blas. https://zachblas.info/works/facial-weaponization-suite/

Excersize 2

In groups of 2 sketch ideas of alternative categories potentially usable in the installation

Presentation for the Talk at Ars Electronica Festival 2023

Unlearning Gender

A Talk in Collaboration with the Ars Electronica Festival

Jelena Mönch
Miguel Rangil
MA Interface Cultures

ARS ELECTRONICA
Art, Technology & Society

Appendix E

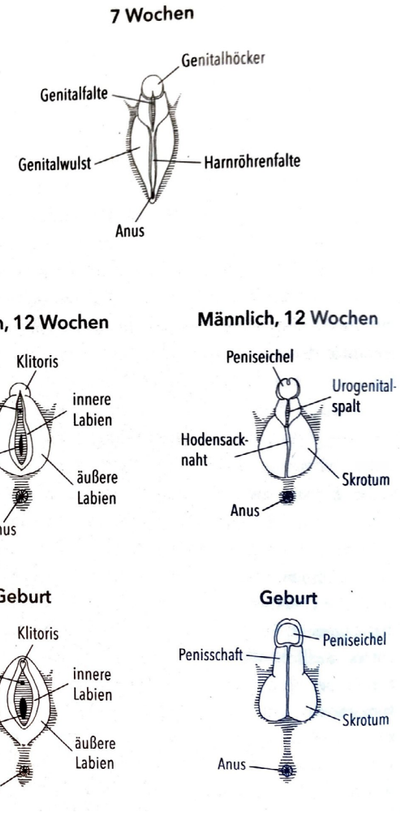
Gender - a social Construct

Presentation Content

- *Theoretical Background*
  - *Gender - a social Construct*
  - *Exiting Gender*
  - *Technology as Manifestation*
- *Our Proposal*
- *The Workshop*
- *Bibliography*

Complexity of Gender

- *Biology as a tool for opression*
- *Biological essentialism*
- *Naturalistic arguments idealise and simplify nature*
- *Intersex make up to 1,7% of the population worldwide*
- *About 2% of the world population have green eyes*
- *Human behaviour - combination of cultural, sociological, biological, physiological factors*



Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.
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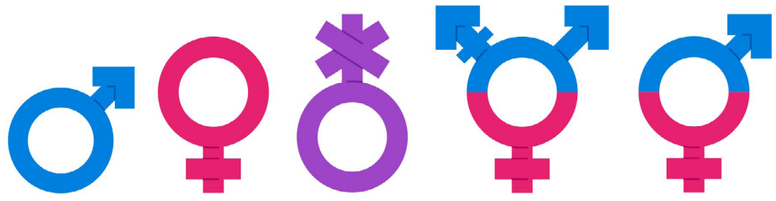
Gender Identities

- *Political identities presuppose gender*
- *Acceptance of frameworks that include structural violence*
- *Acceptance of gender as a natural, unquestionable category*
- *Letting go of gender as an identity*

-- *But they still help us to make ourselves visible in the present opressing social structure of gender!*



Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.

Conclusion

- *Sex and gender diversity is real!*
- *Social construct of binary gender system is not scientifically right*
- *Is there biological sex? - Yes, but it is not binary.*
- *Gender is fluid and performative*

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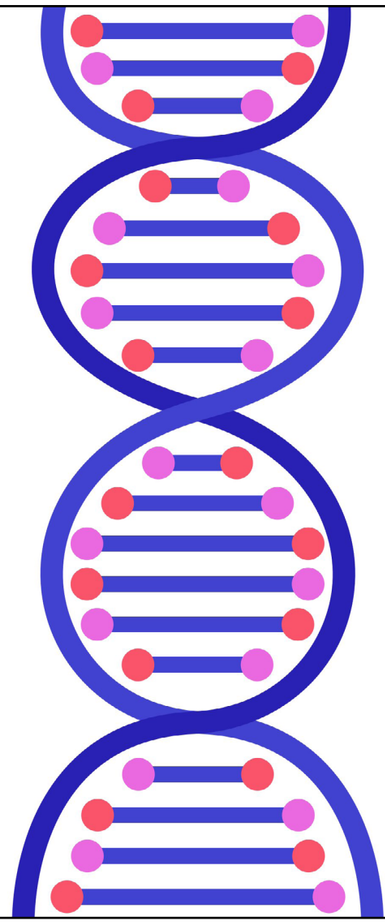
Von Braun, C. (2005). Gender@Wissen: ein Handbuch der Gender-Theorien.

Scientific Bias

- *Chromosomes were misinterpreted*
- *Function manipulated to biologically and scientifically anchor binary gender order*
- *Poor evidence that Y chromosomes mark difference between male and female*
- *Y-chromosome is degraded in men as they age*
- *Biological sex is composed in a much more complex way*



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A political Fiction

- *Gender = a political fiction (like race)*
- *Do not exist in the biological sense but in sociopolitical sense*
- *Has to be produced and maintained artificially (example Intersex)*
- *Social norm does not tolerate variation*
- *Form and maintain structures that are necessary for the effectiveness of the binary gender system*

Roig, E. (2023). Das Ende der Ehe: Für eine Revolution der Liebe | Feministische Impulse für die Abschaffung einer patriarchalen Institution.

Society & Gender

- *Gender roles, gender identity, gender order—derived from anatomical differences*
- *BUT: According to biological facts sex is not a polarity but a continuum Invention of differences*
- *Genderdichotomy- effective social ideologies/constructions*
- *Socially produced through humanities and social science, political and philosophical discourses*

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Exit Gender

- *Form of intervention in structural violence*
- *Constructivist and power-critical concept*
- *Political movement away from gender*
- *Leaves logic of social identity*
- *Concept of action*
- *Two strategies for action:*
  Exgendering & Naming Genderism

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Exiting Gender

Naming Genderism

- Perceive, name structures of violence

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Exgendering

- Acting that lets go of gender
- Exgendering people through perception, reading in, language
- Detach activities, behaviour and appearance from gender
- Giving up genderism
- No degendering (person is denied gender identity as only perceived through central discrimination)

Lann, H., & Lio, O. (2019). exit gender: Gender loslassen und strukturelle Gewalt benennen: eigene Wahrnehmung und soziale Realität verändern.

Technology as Manifestation

- *Biases in data: training set (word embedding), superviesed machine learning system, features, — historical discrimination*
- *Biases in design: algorithm development, data labeling, modeling*
- *Ai ecosystem bias: not enough diversity in the field of work of ai*

-- ***„Technology is social before it is technical“ by Deleuze***

AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

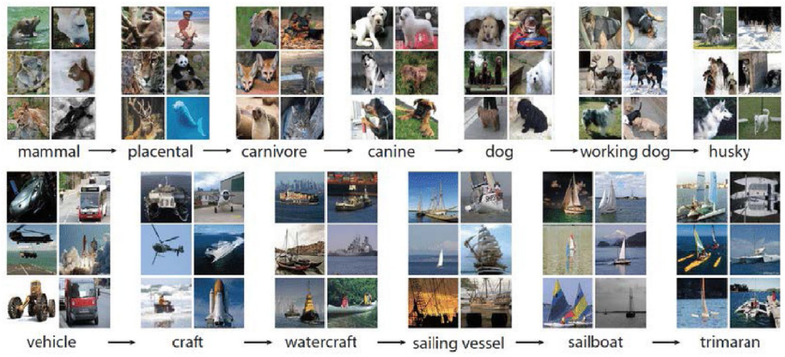
Technology as Manifestation

Our Proposal

Jelena Mönch/Miguel Rangil
Unlearning Gender - Workshop
06.09.2023

Automated Visuality

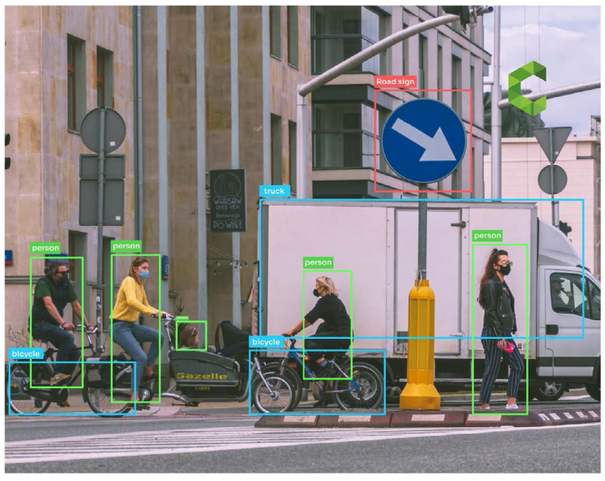
- *Turkers training ImageNet*
- *Predictive policing models like PredPol*
- *Computer vision models to identify people's sexual orientation through physiology*

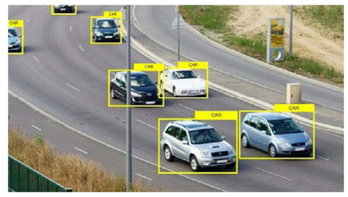


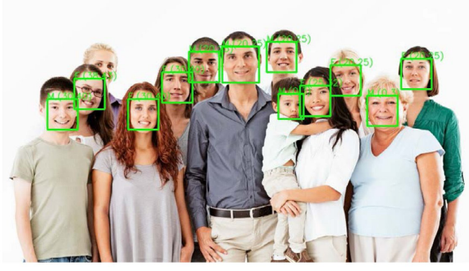
AI Bias - What Is It and How to Avoid It? (n.d.). https://levity.ai/blog/ai-bias-how-to-avoid

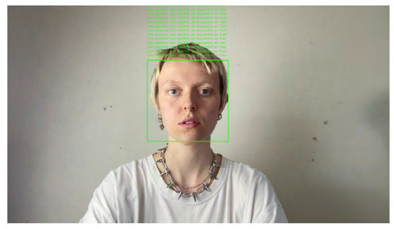
What kind of ***symbolic-poetic strategies*** *to escape binary gender categorization can we develop using a tool like* ***computer vision****?*

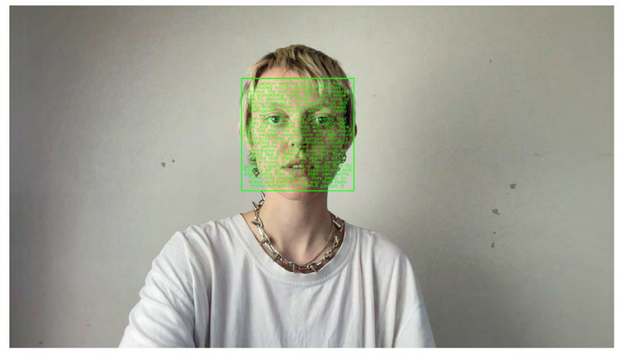
Computer Vision Aesthetics

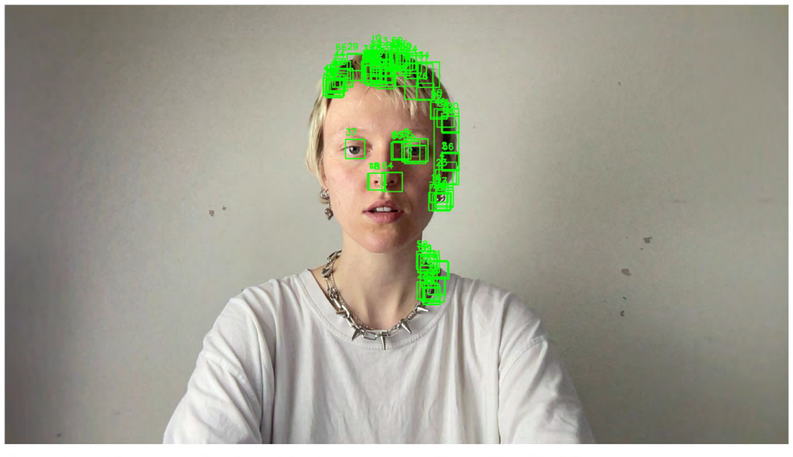


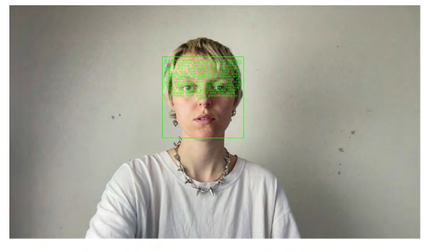












Unlearning Gender

- *Responds to binary gender categorization application of computer vision*
- *Questions social construct of gender*
- *Offers alternative ways of describing*
- *Critiques ascription in computer vision categorization*
- *Partly collective artwork (workshop)*

The Workshop

Exercise 1

Write down descriptions of people around you using alternative categories and non-gendered perspectives.

Exercise 2

In groups of 2 sketch ideas of alternative categories potentially usable in the installation

Jelena Mönch/Miguel Rangil
Unlearning Gender - Workshop

06.09.2023

~20 fingers
- covered in linen-cotton blend
- sitting (at the table)
- no space movement
- have legal rights to stay in Austria
- drink water once in a while
- are present under the roof
- constantly going around
- loose around 100 hairs every day
- have a confused face expression
- are lightened by a glass wall (sunlight comming through)
- decided to come to Lily at some point of their life
- has a collar
- has a layer of material between their feet and floor
- balancing their weight between one part of hip and another
-

a person with long, straight, blond hair, a thin body structure, brown eyes and light-colored skin face. third person wears glasses.

A person with middle length dark brown hair, with facial hair and a marked jawline. this person wears a blue shirt and jeans.

A person with blue eyes and a silver piercing on the right nostril. this person wears a white shirt on top of a black top and sandals.

facial hair
glasses
hair up to shoulders
blue outfit

rings
gold earrings
black boots
oversized shirt

long blonde hair
short skirt
glasses
red longsleeve

red shoes
tied up hair
shoulder bag
hair accessoire

-
- Wearing a shirt. Wearing accessories on the face.
- Having shoulder length hair or longer.
-

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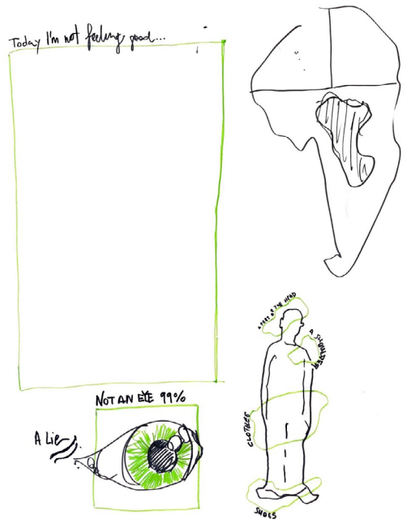

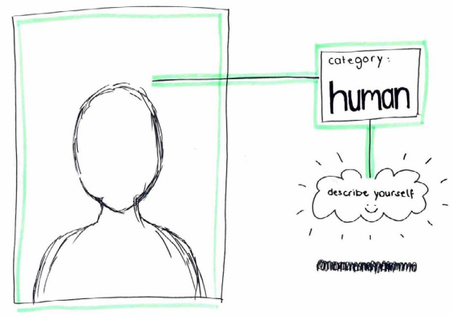

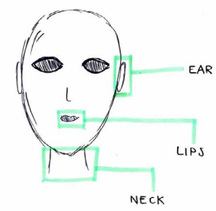

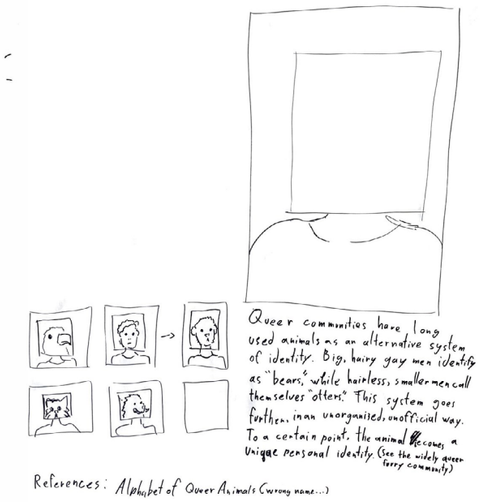

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