MORE THAN A CATEGORY

a human machine perception study

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Abstract

In this day and age, neural systems and deep learning shape the premise of most applications we know as Artificial Intelligence. Such systems are trained on biased datasets and are able, among other things, to perceive, identify and verify human faces in images and videos. Still, they can not understand who we really are as a person. But do we know who we are?

Our own self-perception is constantly changing and we may not even recognise ourselves in yesterday's self. "*more than a category*" explores in a participative approach the possibilities of a text-to-image neural network, as a tool to visualise and improve one's daily self-perception.

Acknowledgments

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thank you for making your work accessible
to the world.

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Last but not least, a thank you to Karin Luginbühl, who always managed to organise a room for us students during the pandemic.

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01_INTRODUCTION

_01.01_General Introduction

This project is dedicated to investigating emerging Artificial intelligence (AI) technology, human machine perception, and how we might use new technology to improve one's self-perception. In the beginning, I questioned what impact AI will have on our society and have been interested in others speculation. Through different participative methods, I intended to grasp societies notion regarding this technology and see where I could accentuate its implementation more as I am persuaded that we should be more conscious and educated concerning rising innovation. An early finding has been that people are aware of its implementation. However, it seems not so important to them. Therefore I narrowed down my focus and conducted social experiments with questionable Facial Recognition Technology (FRT). Here it was important to see how I, others and the program are perceiving a face. I questioned if such a system would be more significant/accurate than a human if trained on human perception.

During the experiments, I encountered numerous people, and an exact categorisation has neither be achieved through one of the parties. Further on, I constantly questioned who those people really are. Even if such technology can perceive, identify and verify a human face, it will never truly understand the captured person, but do we know who we are? Without asking, we cannot know. We serve as an outer observer of ourselves and have to examine our behaviour in certain situations. One's self-perception is constantly changing through various internal and external happenings and can lead to self-discrepancy. Therefore I started my human machine perception study to see if we can use new technology to visualise and improve one's self-perception. But I alone can not create such a study, and therefore, it was important for me to work with others. In a participatory approach, I examined an open source text-to-image program and created an experience where one can reflect on themselves daily.

_01.02_Motivation and Intended Contribution

_01_Personal Interest

AI is a trendy topic. Yes. But it is also a rather complex and challenging field of science to understand. Stil, I want to be able to build a bridge between the often quite ungraspable subject and its users. My motivation and personal goal for this BA project is the notion of working in-between. During my studies at Zurich University of Arts in the Department of Interaction Design, I had the chance to acquire a broad inside view into today's limitless possibilities with various technologies. What interests me most, though, is the impact technology of Artifical Life has had and continues to have on our society nowadays and how it might affect the future.

_02_Intended Contribution

Through my project, I want to make the invisible visible. I like to compare AI with a black box. We know it exists, yet we do not exactly see what is happening inside. I want to provide knowledge, raise awareness (not in a negative way), and animate people to think more about their own future. I want to allow an inside view for those who may not be familiar but are interested in the topic of AI and their future with it. By this, I want to make it more approachable. That does not mean to completely simplify it, teach the audience the math per se or how an algorithm is built from scratch. It should highlight how its implemented today and what effect AI could have on the future. I would like it to be an exercise for the world (my audience) to think and reflect more.

02_RESEARCH

_02.01_Background and Context

Today, technology plays an essential role in our daily life. More than 80%[1] of Swiss citizens use smartphones, laptops and other devices, which easily connect us to the internet 24/7. With those devices, it is possible for us to be in contact with others, and it is also often the first correspondence the average Swiss person has with AI - a system able to correctly interpret external data, learn from it and further adapt to those learnings flexible – all of those usually requiring human intelligence.[2] Machine translation, speech recognition and visual object recognition are three of the most important subfields in AI (Russel, 2019).

For example, Siri, Apple Inc.'s virtual assistant, is an easy-to-use speech recognition software accessible for every Apple Customer. This means you can talk to Siri by using the phrase "Hello Siri", and she appears. Almost like Genie from the magic lamp. Furthermore, you can tell her to set a timer, call somebody in your contact list or look up Artificial Intelligence's definition on the internet. It is easy to use while driving, chilling on the couch or hanging on a cliff. It lets you stay connected without lifting a finger, as advertised on Apple's Website[3]. Google Translate as another example is a simple translation tool for the everyday person. It enables the user to translate text written in one of the 108 applicable languages to another of those.[4] Moreover, Facial Recognition technologies (FRT) is available as well. To name one of many examples is the controversial system provided by the company Clearview AI, which is accessible only by law enforcement. Their goal is to help track down criminals.[5]

These systems function based on a subcategory model of Machine Learning (ML) called Neural Network (NN). A network that should imitate the human brain's function and is trained with data (e.g., images, sound, text). This information is often withdrawn from the internet without the knowledge of the original content creator. The data, generated by subgroups with their own characteristics and behaviours, is therefore heterogeneous. Heterogeneities can bias the data, and a system trained on biased data can lead to wrong predictions.[6] A good example for wrong predictions, is the 2015 case of African – American Jacky Alcine who after logging onto Google Photos, saw that his friends and him have been labelled as gorillas.[7] This shows that the system clearly does not always work correctly and is partially trained on false data.

_01_The evolution of Artificial Intelligence

The notion of Artificial Life is nothing new. Even in former societies, stories of the man-made "thing" can be found. In ancient Greece, Prometheus created a man out of mud and let Athena breathe life into it[8]. In Judaism, it is the Golem created by a Rabbi[9]. Or almost a century ago, Fritz Lang, a German Filmmaker, let Dr Mabuse transfer the consciousness from a woman to a robot in the movie Metropolis.[10]

Alain Turing started to question the intelligence of machines after he created "the bomb", an encoding machine that was able to crack the Enigma Code of the Germans during World War II. He, therefore, developed a method in 1951 to test the intelligence of machines. The Turing test defines if a machine is intelligent by letting a human interact with a machine and another human. If the first human cannot recognize the difference between those two, then the machine is intelligent.[11] The term "Artificial Intelligence", however, did not emerge before the summer of 1956, where Marvin Minsky and John McCarthy invited other scientists to a summer workshop at Dartmouth College, New Hampshire, USA, called; "*Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI)*". This workshop intended to define the learning ability of a machine. "*to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it*" (McCarthy, 1956).[12] For around two decades after the Summer Project, noteworthy success had been made within the field of AI. Out of this this era -ELIZA - a natural language processing tool created by Joseph Weizenbaum and the General Problem Solver program developed by Herbert Simon and Cliff Shawn - is worth mentioning. These so-called Expert Systems are a collection of rules which can be formalized and reconstructed in a top-down approach as a series of "if-then" statements and have been the reason for substantial funding in this field. This progress let Marvin Minsky believe that a machine with the general intelligence of a human being could exist in three to eight years. As we know today, this has not been the case. A lack of improvement has been that such systems may perform well when a top-down approach is needed, such as playing a chess game, but not if recognising a face or differentiating between two, unlike images. Thus, these systems are no true AI.

To achieve true AI, a system has to replicate the process of neurons in human brains. However, already in 1969, Minsky stated that no current computer has sufficient processing power to handle the work of an artificial neural network. Based on a destructive report in 1973 of James Lighthill, a British mathematician, funding for AI research had mainly been stopped in the UK except for the Universities of Edinburgh, Sussex and Essex. The U.S. government soon after that followed this example. Artificial Neural Network had a comeback in 2015, when Alpha Go, a system created by Google, managed to beat the World Champion Go player in a tournament of five games. Important to mention here is that compared to a Chess game with opening possibilities of 20 moves, a Go game has 361. That was only possible as Alpha Go used a specific type of artificial neural network called deep learning. Nowadays, neural systems and deeplLearning shape the premise of most applications we know under the name of AI.[11]

These systems are generally referred to as Artificial Narrow Intelligence (ANI), the first generation of AI. They let Siri understand our spoken language, tag people in images or make self-driving cars possible.[2] Further on, AI technology could lead to far more than just being a tool for us humans to use. Real AI is not achievable solely through increasing computational power. It is undoubtedly easier and faster to get a result. However, speed alone will not do it. We have to design a better system.[7] Future societies may experience the second generation of further developed algorithms that can reason, plan, and solve problems for tasks they have never been designed for. They are generally referred to as Artificial General Intelligence (AGI). The third generation of AI has consciousness, are truly self-aware and could make humans redundant. A true AI which could have the ability to be creative has general wisdom and social skills. Due to this, some tend to call them Artificial Super Intelligence (ASI).[2]

_02_Facial Recogniton and Data

Facial Recognition (FR) dates back to the 60s. Woody Bledsoe, a co-founder of Panoramic Research in Palo Alto, developed a way to manually input the positions of a persons' facial features into a computer. This showed, even if not in a practical way, that the face was a valid biometric. Since then, the accuracy of such systems has improved rapidly, and in 1996 the first build-up facial database was created and funded in the US under the name "FERET". Nowadays, some systems can detect or locate human faces in images and videos. It is a process of identifying or verifying the identity of a person based on their facial features. They capture and transform the analogue into digital information and further verify if two faces are the same. This technology is implemented worldwide in almost every country. It is not only used in the law enforcement sector to track down criminals but as well in security to unlock our phones, as a tool to suppress minorities such as the Uyghurs in China, schools, medicine, social media, marketing and human to machine interaction where a system will act according to your facial expressions.[13] They rely on ML, trained with heterogeneous data and questionable categorisations of people. Nowadays, so-called Ghostworkers[14] label the data. Even if an ethical evaluation process is more often included in their work process, the categorisations are still based on human perception and therefore biased. Those massive datasets have been made available for public and research.

Not only questionable categorisations but also lack of diversity in datasets can create a problem when applying FRT. Biases in Data can lead to discrimination of specific subgroups, as Joy Buolamwini and Timnit Gebru present in an excellent way through their research. Their work shows a new method to evaluate bias present in automated facial analysis algorithms and datasets concerning phenotypic subgroups. Using the Fitzpatrick Skin Type, they found that the characterisation and distribution of gender and skin type of two facial analysis benchmarks, IJB-A and Adience, include more than 70 % lighter-skinned people. Because of this, they created a balanced dataset and evaluated three commercially available gender FRT's (MSFT, Face ++, IBM). They found out that all classifiers better categorise male subject than females and lighter-skinned faces better than darker-skinned faces. Darker-skinned females are the most misclassified subjects.[15]

ANI

Artificial Narrow Intelligence

weak, below human - level AI

- applies AI only to specific areas
- unable to autonomously solve problems in other areas
- outperforms/ equals humans in the specific area

Siri can recognice your voice but cannot perform other tasks like driving a car.

infographic 1

TODAY

ASI
Artificial Super Intelligence
conscious/self-aware, above human - level AI

- applies AI to any area
- able to solve problems in other areas instantaneously
- outperforms humans in all areas

Siri develops super-human capabilities such as solving complex mathematical problems instantaneously or writing a best seller in a heart (or clock) beat.

AGI
Artificial General Intelligence
strong, human - level AI

- applies AI to several areas
- able to autonomously solve problems in other areas
- outperforms/ equals humans in several area

Siri evolves into a humanoid robot with wide capabilities, including voice recognition, coffee preparation, and writing skills.

FUTURE

_02.02_Research Questions

What impact will AI have on our society?

Can a Facial Recognition system perception, be more significant/ accurate than a humans - if the dataset is based on human's perception?

How can I as an Interaction Designer use ML to improve and visualise one's self-perception.

_02.03_Methodology

_01_Desk Research

Crucial for the start of my BA project is desk research. What is already out there? By researching on the internet about my topics, I hope to find various literature, movies, tools, design, and art projects, including AI and the future.

_02_Cultural Probe

As a first approach to let people think about the future, I chose an analogue way of asking a question. Therefore, I sent out 25 of my Postcards to the world in January 2021 with the title “Future Trash”. It shows an image of a pile of CD’s (bird view) and includes the question, “What will be your future trash?” I chose this Postcard as it is something from the past tackling the future. I am curious how many people receive my Postcard as well as what their answers will be.

_03_Survey & Interviews

To be able to know what others think, you have to ask them questions. Some tend to be closed up and do not like to speak in bigger groups. Others tell their point of view openly. To receive some insights from people, I will use different approaches. Surveys where everybody can stay anonymous - if they want to, casual talks where the conversation is led by others and not myself and narrated interviews-, where I directly ask specific questions.

_04_Future Workshops

Sometimes it is easier for others to show what they imagine rather than explain it with words. Therefore, I created a workshop where my participants first have to clarify when their future is happening, and afterwards, I let them create it. Beforehand, I informed them to bring some objects to build with – if this is forgotten, things which are quickly found in their current surroundings are good enough. Due to the Pandemic, I will have to hold the first workshop online and adapt according to Switzerland’s situation. However, I prefer to work with my participants in person.

_05_Experiments

By experimenting with FRT, I want to find a more precise way to accentuate AI implementation in our society. Additionally, I need to understand better, how I, others a system perceives a human face. Through embodying such a program, letting others categorise strangers as if they were such a program, and exposing strangers to being filmed and categorised live.

03_RELATED PROJECTS

_03.01_The Future of Secrets, 2018, metaLAB (at) Harvard

_01_What

The Future of Secrets addresses the question how we interact with our devices and how much we give away so freely. What will happen with our data in the future? Who will read it and what will be created or interpreted out of it? Visitors can type their secrets into a computer. As soon as they submit them, a printer starts to print out secrets from other visitors freely to take and walk away with. The interactive installation created by Sarah Newman, Jessica Yurkofsky and Rachel Kalmar, metaLAB (at) Harvard uses a computer, a printer and secrets of the visitors. Through this, they question today's relationship and behaviour with our technical devices and personal data.[16]

_02_Why

I like this project as even through a simple - for many of us every day - action the visitors are persuaded to give away their secret. Something we anyhow often already do by using the internet and other applications on our devices. In this case the secrets are not our personal data but our personal thoughts. The difference here is that the guests provide their insights willingly. By consecutively receiving afterwards someone else's secret, I can imagine that many questions arise while looking at the words. Whose secret is this? What happens with mine? Where are my thoughts stored? I would personally feel betrayed because I was not instructed, that my data is given away. The approach to raise awareness through a simple interaction is something I like to take further on with me for my Bachelor Project.

image 1

_03.02_E.L.I.Z.A Talking, 2013, Norbert Landsteiner, mass:werk – media environments

_01_What

«E.L.I.Z.A. Talking» is a project to explore the capabilities of client-side speech I/O in modern browsers. The project features Joseph Weizenbaum's famous ELIZA program, which demoed the thrills of a natural language conversation with a computer for the very first time. Joseph Weizenbaum (1923 – 2008) was an important pioneer in computer technologies and became later well known for his critique of technological progress. His program is presented here in the famous VT100 terminal, which was introduced in 1978 and became soon a universal standard. It provided many users their first exposure to interactive computing — an experience that might not have been far from what a real chat with a computer would mean today.[17]

_02_Why

This project is interesting for me, as it fills the gap between the past and today. It provides knowledge and raises awareness on the topic of AI - A simple platform accessible over the internet for everyone. It lets visitors interact with one of the first programs written in this field through text and speech. By adding the voice recognition software, it allows people to communicate with a computer almost in the same way as with another human. Surely E.L.I.Z.A answers are still very odd and can bring up an uncanny feeling. However, a first and easy touchpoint with this topic is set.

image 2

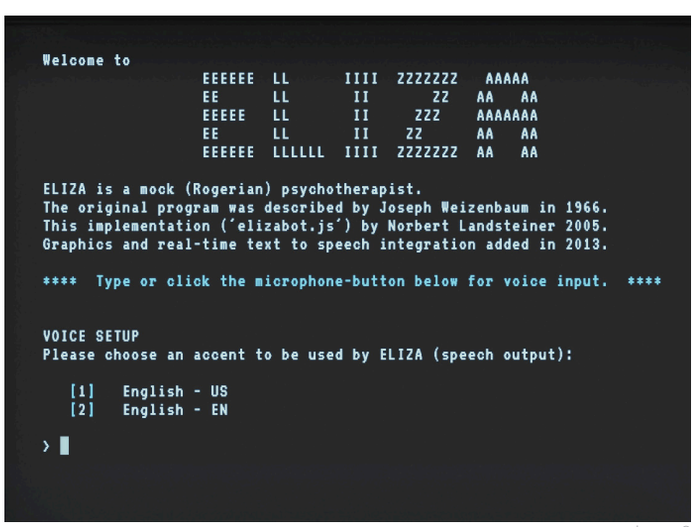


image 3

_03.03_ImageNet Roulette: An Experiment in Classification, 2019, Excavating AI

_01_ What

ImageNet Roulette is an experimental approach to investigating the usage of biased datasets in facial recognition systems by Kate Crawford and Trevor Palgen. By using an open-source Caffe deep learning framework which learned on the labels and images of the “person” category of ImageNet (no longer available since 11MAR21). The application lets users upload any picture, scans the images for faces, and, if one is detected, sends it back with a bounding box around the face and a categorisation. If none is detected, it sends the image back with a label in the upper left corner. Questionable categorisation has been made through this. A big boy in a rugby shirt is labelled as a “Loser”, a sleeping, pregnant woman as a “Snob”, or Barack Obama as an “Anti - Semite”, to name just a few examples.[18]

_02_ Why

This experiment fascinates me because it shows the usage of facial recognition trained on bias data of ImageNetin in a simple yet powerful way. Unfortunately, the whole experience of using the Roulette is no longer available. Besides that, a well-documented process is still accessible over their website excavaiting.ai. Through this, they provide knowledge and raise awareness at the same time.

image 4

_03.04_Optimising for Beauty, 2017, Memo Akten

_01_ What

An artificial neural network dreams up new faces whilst it is training on a well-known dataset of thousands of celebrities. Every face seen here is fictional, imagined by the neural network based on what it is seeing and learning. (Memo Akten, 2017)

_02_ Why

What if we could decide what is right or wrong based on the fact that we got fed thousands of information. How do we decide? Can there be something right, but for the standard wrong? What if we learned and decided like we program, teach and create AI's nowadays? What if we acted like a computer, only seeing right or wrong and right is only right if the norm has the same conclusion? I like this project very much as it raises awareness regarding AI and how we teach it. Through the project, I started to question how we perceive our environment and decide based on our perception. I wonder how we could teach an AI moral sense and if we even should do that? What about a code of ethics?

image 5

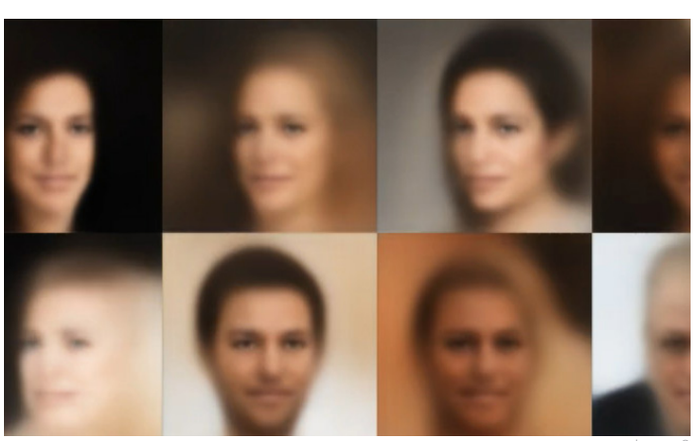


image 6

_03.05_Zoom Pavilion, 2015, Rafael Lozano-Hemmer

_01_ What

An interactive, immersive art installation that consists of three immersive projections fed by 12 computerized surveillance systems trained on the public. By using Facial Recognition, it is possible to detect the presence of the participants while simultaneously recording their spatial relationship within the exhibition space.[19]

_02_ Why

A great value of this work is the participant, who is actively included in the piece. Through this, a connection between the human and the machine starts to evolve and between the detected people themselves. It makes one vulnerable to be displaced and exposed like this. If it happens collectively, I can imagine that the visitors are more likely to be fascinated by the possibilities of this technology than its misusage in the real world. Sizing up the scenery and displaying everything on massive walls has a more aesthetically pleasing effect than a usual screen. I very much like this artwork because human presence is likewise quite essential and not at all. As if the individuum is not as important as the group.

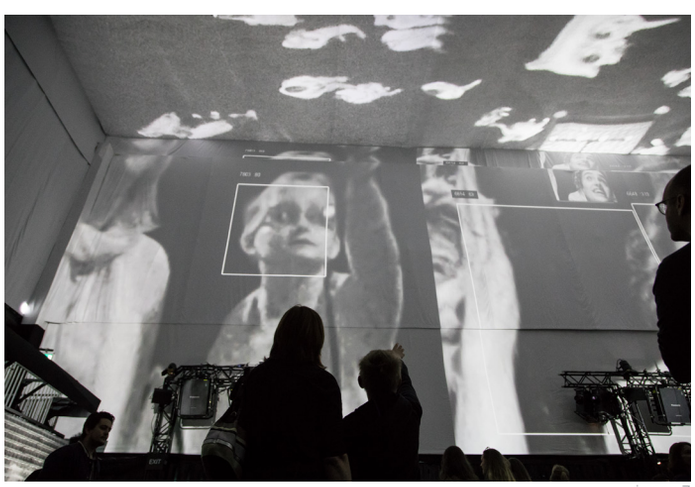


image 7

image 8

04_FIELD RESEARCH

_04.01_Field Research Aim

My intention for this project is to work with others. I alone cannot know what kind of impact specific technology, especially the evolving technology of AI, will have on our society. I am interested in how AI has already impacted others' lives and what they think, feel and imagine could happen in the future.

My primary audience is people around me, living in the area of Basel and Zürich, Switzerland. Are people aware of the implementation of this technology today? Can they imagine the effect it will have on our future? In which way are they including Artificial Life in the future – if they do so? Through desk research, cultural probe, discourse, surveys, interviews, casual talks and workshops with laypeople and experts, I aim to grasp the notion of today's society's thoughts regarding this technology. This information is essential for further steps.

_04.02_Desk Research

Through desk research, I had the possibilities to get as much information as needed at the beginning of my Bachelor Project. The amount of data available nowadays is insane, and it is challenging to stop looking further into a specific topic. Especially in the field of AI and the future innnumerable information is available, making it difficult to get the feeling of having researched enough.

Despite that, I first focused mainly on fiction in literature as well in movies. I was interested in how people from past societies imagined the future in relation to AI. Notably, I researched with the “Matrix” trilogy[20] and the movie “Her=: Ella”[21]. Both stories include the notion of an intelligent form that overgrows humanity in ways not possible yet. Furthermore, I continued researching the active implementation of AI in today’s society and its impact on us. Already nowadays, AI has a significant influence on various areas, for instance in agriculture, medicine, social life, design or art.

_04.03_Cultural Probe

My first attempt to let people question their future was a postcard delivered to their homes. Through this, I intend to grasp the notion of society regarding the future and wondered if they would include AI in any way. The postcard shows an image of a pile of CD's (bird view) and is named Future Trash. The message box contains the following question: "What will be your Future Trash?" I sent the postcards to my fellow students off Summer School 2020, which live in Europe and Asia. After one month, I was happy to receive the first response in the WhatsApp group chat.

Immediately after I read this answer, I noticed that the question in combination with the image would probably lead to a pretty specific outcome. – Mostly concerning digital data carriers and the data written on it. With the third answer, my assumption was proven right. I have to admit that I unwillingly manipulated my participants and kind of pathed them a way to answer without being able to cross the line. If I had sent out postcards, with a white frame, I would have received different answers with more varieties in their speculations. Many further messaged me, that the postcards reached their mailboxes, yet I only got four responses directly related to my question. Despite the fact that I only received a small number of answers, this mini-approach showed me that people are open to discussing the future and I could start a discourse, involving people around the world.

"I think it's all the photos in my iPhone camera roll that I need to delete." (UK)

"In response to your question, I think that USB's or SSD's and QR codes will be the trash of the future as software and technology updates" (UK)

"So far, my "future trash" is a cabinet full of hard drives that I have no idea what's on them:) I traded them for endless cloud accounts...perhaps, they are "future trash". I was thinking about it in the media/archive way your image suggests. it's super relevant in how we see ourselves—as a sequence of knowledge in the model of digital archiving." (CH)

"I have floppy disks and useless 2GB SD cards." (HK)

image 9

_04.04_Future/AI Survey

At the beginning of February 2021, I reached out via E-Mail and WhatsApp to my fellow students, work colleagues, friends and families and invited them to fill out my Future/ AI Survey – anonymously if wished. Through this, I intended to collect as many viewpoints of others regarding the future. Here I split up the general future with future concerning AI. It was important for me to know if they would include the topic of Artificial Intelligence into their general future scenario.

1. Who are you? Tell me something about you :)
2. Imagine the future. How will it look like? What is the period of time your speculation is happening?
3. Do you know what an AI (Artificial Intelligence) is?
4. Try to explain how an AI works. Even if you do not know how it works - try to imagine it
5. What do you think, in which part of your life have you already been in contact with an AI?
6. Imagine the future IN RELATION TO AI. How will it look like? What is the period of time your speculation is happening?
7. Last but not least. :) Would you be open to attend a workshop to elaborate on further notions regarding possible futures? Yes? Please write down your E-Mail Address.

I wanted them to feel free to let me know who they are and allow them to stay behind a curtain regarding their answers. Despite giving them this opportunity, I received many personal responses from a broad audience. For two weeks, the survey was accessible to everyone. I collected around 30 answers from people worldwide, mainly from participants based in Switzerland (different areas), France, Croatia, the United States of America, China and Taiwan. Their birth years vary between the Silent Generation and Generation Z. They have different work backgrounds such as engineer, physicist, interaction designer, artist, mother, writer, therapists, hotelier, electrician or banker - To name just a few. Further on, they are interested in all sorts of things, for example, fashion, nature, family, friends, or science.

Only around 8% did not know what AI is, and many are aware that they have already been in contact with it, mainly through their phones, chatbots or targeted advertisement. Almost everyone could imagine how AI functions. Some are informed of the different subcategories of AI, such as ML and that it is an area of science based on data. Others compared it to an electrical/ artificial brain, which improves itself through learning. – train it as a child. Many are aware that it should imitate human behaviour. The speculations regarding the future in general and in relation to AI are as diverse as the participants. Answers regarding the future in general are mainly focused on personal goals, utopian settings of a green planet, or an exaggeration of current crises. A few mentioned the growth of technology and therefore a change in the system and named as examples flying/ self-driving cars or general automation of services.

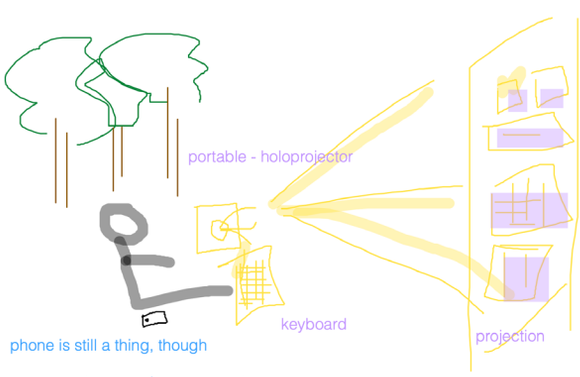
Answers regarding the future in relation to AI tended to be more dystopian and tackled various eras such as, transhumanism, automation, AI war and Human – AI relationship. Their speculations are often compared to video games, literature or movies. The timeframe their future will happening spans between “now” and “far away”, but most of them will occur in the next 50 to 70 years. In total, I extracted 128 speculations, which provides me the desired insights of many. The most memorable answer for me has been

“Future is already today.”

_04.05_Discourse and Casual Talks

To get some insights from people, I searched discourses with others in February 2021. In the past, I often got the feedback that cameras, lights, and microphones in front of one's faces while interviewing, can make people uncomfortable and may lead to another outcome as wished. Therefore, I chose a different, more casual approach, to get some impressions from others about the future with AI. I wondered if they would include AI particularly as a cause for something specific or if they only include it in combination with the digitalization. I did not inform my friends beforehand about my intention as I wanted to receive the raw version of their thoughts. The settings were a walk through the city of Basel, a Zoom session after work and my kitchen while eating dinner together. The number of people included in the discussions varied between one to four people. Their social backgrounds and origin can bee located to Asia, Switzerland and Eastern Europe studying or working in the areas of art, design and law. All of them can be described as a millenial.

I started the conversation with open questions regarding the future and how they imagined it. I never asked explicitly for speculations related to AI as I did not want to guide them in one direction, which they may not even have thought of. Instead, I listened and let them lead the dialogue. The conversations mainly started with widely, and crazy speculations about future in general, often related to music(videos), literature or movies, and ended in themes that are currently heavily discussed everywhere, such as racial and gender justice, climate crisis or remote working. The topic of AI was not included as much as I thought. Only in combination with new technology, leading to a specific product but never directly named as a particular cause for something that could happen.



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_04.06_Future/AI Workshop

My intention with the Future Workshop was to get a better understanding of others' imagination on what might happen in the future. As some tend to rather show instead of just explaining what goes on in their head, I included a building part. I called for participation in my social circle as well over the Future/ AI Survey. Nine volunteers reached out to speculate more about the future with me. Due to different availability and geolocation the workshops have taken place once online and twice offline on three different dates.

The offline workshops contained two parts: The first part is dedicated to working together on what and when something is happening (15 - 20 min) and the second part to construct individually or together a (desired) speculation (40 – 45 min). In the end I included a quick recap and feedback round (5min). The goal of the offline workshops was to get a feeling of what others think will happen in the future. I was curious if they would actively include the technology of Artificial Intelligence as a cause of something, as a tool or not mention it at all.

The online workshop was an extension of the Future/ AI Survey and is built up differently. It contained three parts: The first part is dedicated to categorizing their own future - based on the 128 speculation from the survey (20 – 25 min). The second part focused on future today (20 – 25) and the third part to individually construct (desired) speculation (5 – 10 min). In the end I included a quick recap and feedback round (5min). With this different approach off the Future Workshop I intended to confirm that people are open to speculate about the future in general, rather tend to create a dystopian world setting, not include AI specifically in their speculations and need a connection to the present.

_01_Offline 1

The first offline workshop took place in my kitchen and involved three participants belonging to the millenials, working as a hairdresser, in IT and engineering. During the first part, they decided together on a time span from now to 2070 and added in total 17 assumptions. After that I emptied a box full of Legos in front of them and asked to try and build a future chosen from their own timeline.

The outcome of constructing speculations with Legos has been an AR - Ring, Climat-Storm, Dystopian Metropolis, World Fire, Robot – the helping hand, Teleporter, Self – driving Home Office Mobile and a super healthy Super-Human in a post-modern war mobile. In the recap round they mentioned that their speculations surely involved a change in technology however the area of AI is not directly a cause for a specific outcome e.g., World Fire, Climat-Storm or Dystopian Metropolis. Rather they look at it as a tool to use to reach the desired future, e.g., AR-Ring, Teleporter, Self – driving Home Office Mobile.

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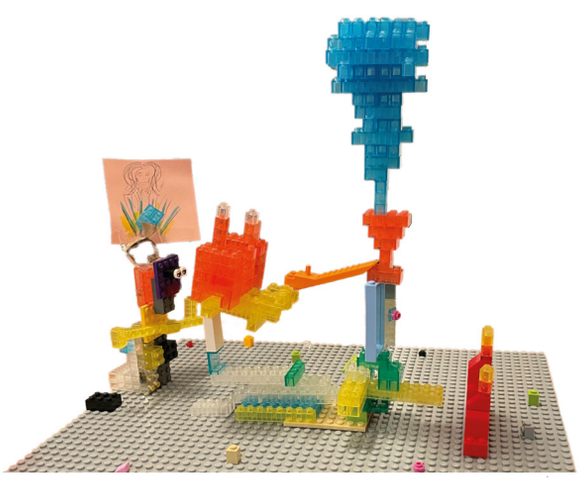

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_02_Offline 2

The second offline workshop took place at Toni Areal in the IAD atelier and involved four of my fellow interaction design students. Beforehand I informed my participants to bring something with them for future building as I noticed from the first offline workshop, that Legos even if they are modular can be restricting. As they got engaged in a deep conversation about various future scenarios I did not want to stop them after the calculated time for the first part and therefore let them continue speculating.

Together they came up with a time span of “future” to “future future” with more than 40 diverse situations which were also partly connected to each other. To not leave the building part completely out of the workshop, I still asked them to quickly prototype their desired future with anything they could find in the atelier (they forgot to bring something with them). In about 5 minutes they collected random objects in the atelier and built their individual desired future. The outcome included an environment which allows working as a freelancer for various projects with an autonomous car, a home where each room has its own purpose such as a zero-gravity room with a super surround system, a world where everything is connected and working together and a society where gender equality is a thing. After we finished the workshop, I mentioned that I noticed that they had not actively included the area of AI and asked what they think might happen with this technology. They think, that AI will be used as a tool by people of power and that whoever is in charge could globally take over. Or that through automation humans have more time to do more fun stuff as they (the AI) work for us. This could lead to either a dystopian setting where we become less and less intelligent and lazier or utopian versions where it triggers us to think further and differently than usual.

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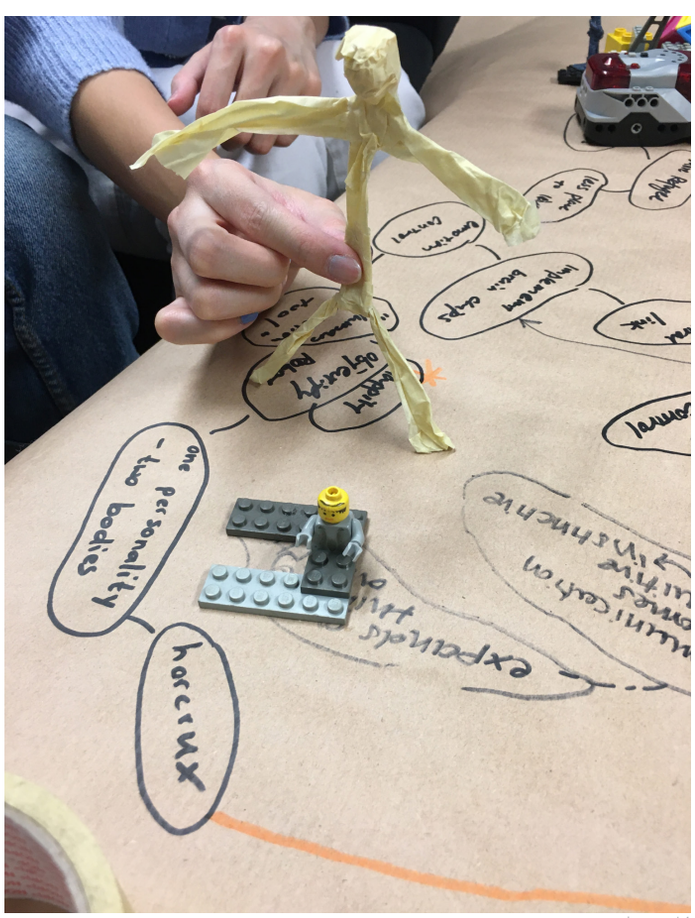

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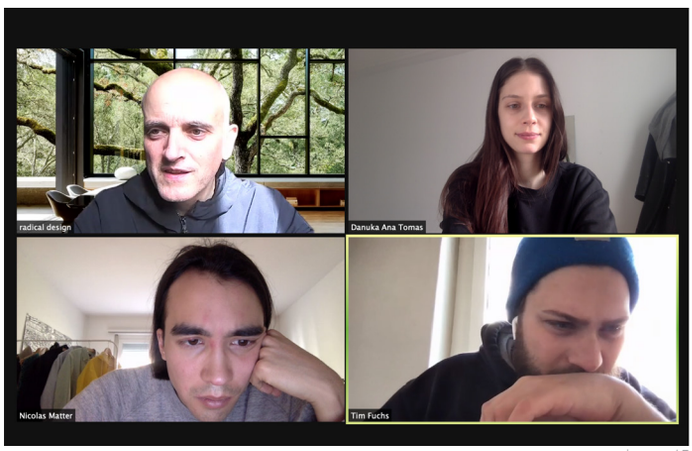
_03_Online 1

The first and only online workshop took place over Zoom. My three participants belong to the generation which grew up without computers and are working in the field of interaction and game design. Beforehand I asked them to bring objects, which they then, later on, can use to build something. In the beginning, I let them categories the 128 speculations, which I extracted in advance from the survey. In Miro, they created five main categories – work, global politics, ecological crisis, economics, AI everywhere – and systematically assigned the speculations to it. Even if they could not allocate all of them, it was interesting to observe that the category of AI everywhere was created last. This is because they first had to get an overview of the many topics and started looking for the more graspable things first.



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In the second part, they could name anything that they think is already considered future today and what kind of influence it might have on us. Their range of future today reaches from Switzerland with its self-service stores, remote working environment and the notion of sharing objects to global connectivity through the internet. Changing and new work such as being an influencer or social media manager and teaching Chinese (even if this is not a language, but we know what they meant) being taught in Africa to Hackteria - an open-source platform for biology and art. All of them evolving by the use of new technology. Last but not least, they mentioned companies like SpaceX or Neuralink, which are for them a driving force and certainly have an influence with their products/services on the future. In the end, they had the chance to quickly prototype what they think the future will look like. The outcome is a programmable environment with a different flora than that existing today - where woman are in charge, a society consisting of cyborgs and cities where only modular buildings exist with different purposed layers, e.g., food processing, energy production and living in communal ways.

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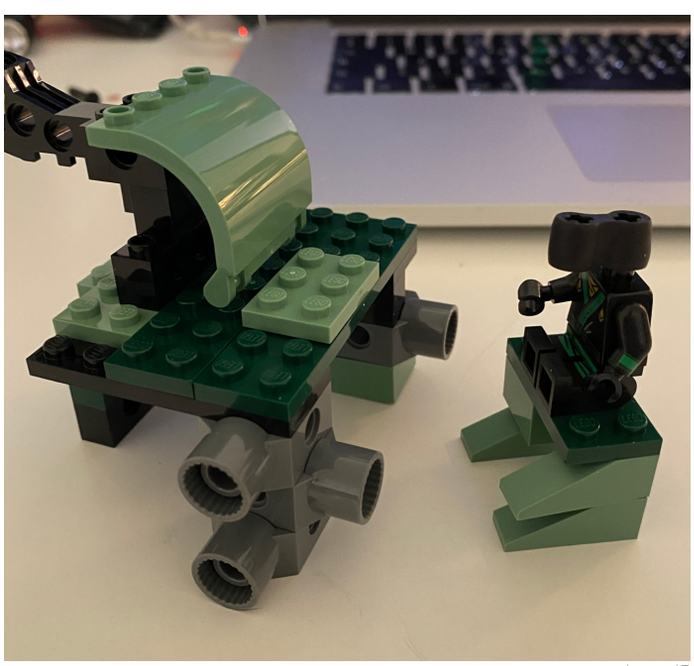

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_04.07_Experts Interview

So far, I did not have any problems getting insights from various non-specialists. Nevertheless, I am interested in experts' viewpoints, such as law enforecements who uses this technology or researchers, scientists and ethics who are constructing the future with it. This is important to me as they are accountable for what will come. I wonder what their todays knowledge is and how they implement AI in their future. In the begining it was almost impossible to find someone who is decent enough to talk to me about this topic however, I received some information from two Police press speakers of the Canton of Basel Stadt and Zurich. Both parties assured me that they do not use Facial Recognition system and nor collect any Video footage over a CCTV System in public. Nevertheless, they keep data collected on demonstrations or confiscate it during an investigation e.g., a homicide and a neighbours security camera is facing the scenery. The Polices of Canton Aargau, Schafhausen and Vaud use FRT.[22]

Additionally, I had the chance to talk to Mrs Dr Dorothea Baur. She is an expert with many years of international and interdisciplinary experience in the field of ethics at the interface between business, technology, society and sustainability.* Through her insights, I could understand better the ethical aspects and problems we have to face nowadays regarding the implementation of AI in our society. A machine created by humans and trained on human data mirrors our society and, therefore, is only an exaggeration of our bias perception. Further on, we can indeed create a better ethical working process and include the most diverse set of human workers, though it is the question if we as a society will accept changes made by new systems.

*full interview with Dr Dorothea Bauer in annex

_04.08_Findings

So far, I had the chance to get a broad inside view of around 50 people's thoughts regarding the future in general and AI. I collected over 150 speculations through discourse, cultural probe, casual talks, surveys, workshops and interviews. By this, I could grasp the notion of the society in my area (as primarily intended) and other countries.

In the beginning, I questioned what impact Artificial Life would have on our society. I wondered if people are aware of its implementation and if they can imagine the effect, it will have on our future. I was further curious if they included it at all in their future scenarios and, if so, how. When people generally talk about the future, the topics are often heavily connected to the present and include the change new technology might have on our society. While speculating about the future in general and AI, people are very creative and can imagine the craziest things. Both utopian and dystopian world settings have been named and framed differently, though their scenarios tend to be dystopian. Nevertheless, seldomly has AI's technology been actively named as the cause for something unless specifically asked about it. This leads me to conclude that people are aware of AI implementation, though it seems not so important to them, as it is often not the first thing they name while speculating about the future. What impact AI will have on our future society is something I could not answer through my field research - and probably never will.

AI already has a significant impact on our society and tackles various sectors like agriculture, medicine, security, art and design. The algorithms programmed by humans based on our bias perception exaggerate our society in good and bad ways. It is, in the end, not the question of what impact AI will have on us, thus if we accept the changes possible through it. While speculating about the future, we must include AI as an additional variable, but we will never know for sure what will come. All the findings out of my field research only encouraged me to investigate further how to raise awareness regarding the implementation of AI technology. However, not in a speculative and future oriented way but in the here and now - Because I am convinced that we should be better informed about today's emerging AI technology.

05_EXPERIMENTS

_05.01_ Aim

To continue my investigation, finding a way to accentuate AI's implementation in our society. I had to narrow down my focus in this massive field of science. Therefore I choose FRT, as many people have already been (un) consciously in contact with it. I question how such a system perceives a human face and if it is more significant/accurate than humans – if it is based on human's perception. Three social experiments should help me to answer this question. The first experiment is all about understanding the function of the program by embodying it. The second about how others perceive strangers (let them be the program). The third one will include using it in the real world on strangers. Through this I want to examine how significant/accurate open source FRT are today and observ people's reaction to being filmed and categorised in public.

_05.02_Be a FR Program

A computer program is based on combining input, storage space (if possible), processing and output. To understand, however, how such a system really works, we have to try it out and, if possible, embody it. Inspired by the book “The design of Future Things” by Donald A. Norman, published in 2007, I thought about how FRT might work, think, decides, or if it can learn something new. Therefore, I started my first experiment and wrote a simple script for myself. In the beginning, I questioned how I could be a program that can detect human faces and even maybe categorise them? What are the categories? How can it decide based on those categories? Can I decide without being bias? Let’s anticipate that I am already trained and able to recognise human faces and categorise them by gender, age and emotion. Whereas the categorisations, the input, the storage space/ processing part and the output are defined as follow:

Gender = Male / Female
Age = Child/ Teenager/ Adult/ Old
Facial Expression = Neutral/ Mad/ Happy
Input = My eyes
Storage Space/ Processing part = My brain
Output = My voice (to record everything)

If everything is set, I can start and be a program for one hour in the real world. To have the chance to see as many people as possible, I chose to walk through the city of Basel, Switzerland. My first two attempts failed due to bad weather and difficulties perceiving faces with a mask. Though, I learned an additional categorisation, “mask”. On a sunny day, I had the chance to conduct my first experiment successfully.*

*full transcript of experiment 1 in annex

_01_ Conclusion Experiment 1

After one hour of walking through the City, I have been able to perceive and categorise in total 393 human faces, 136 masks, and 2 babies. Additional 17 perceptions could not be classified correctly by me. I categorised the human faces as follow.

Male = 117
Female = 138
Child = 21
Teenager = 25
Adult = 173
Old = 36
Happy = 13
Neutral = 236
Mad = 6

In the beginning, I was pretty slow and sometimes random occurring emotions and thoughts let me think differently. Thus, I noticed that my personal biases intervene with the categorisation, e.g., if this little child is wearing a dress, it must be a girl or similar. A conclusion I could draw very early on has been that it is impossible to categorise a baby's face in any way. Therefore I created a new category for it, "baby". This learning helped me to continue and having fewer syntax errors. After a while, I got used to it, categorising stranger in narrow ways. Towards the end, however, three incidence - the Micky mouse, the sad person and the skeleton threw me out of my flow. I had difficulties using my presets correctly and started to think further about those persons. Who are they? How do they identify themselves? What are they doing in their lives? Additionally, I had a problem with how much data I could collect from private conversations of strangers. Despite not filming them, I recorded their voices and never have asked for permission. Even if it was happening in public space, I felt not comfortable in the end gaining so much power over their spoken words.

image 18

_05.03_Let strangers categorise strangers

My second experiment goal was to see how people categorise others and how they react to the same persons' classification through FRT. Therefore, I randomly picked eight pictures from websites that provide free images and one of myself as a kid. In the beginning, I tried to approach people on the street and asked them for their time. Sadly, nobody was interested. Thus, I created a survey with the images and the question to categorise the portraited human and to write down the first thing which comes into their mind. Again, I chose WhatsApp to distribute my survey in my social circle with the request for feedback when finished. After that, I sent them a video that shows how FRT recognises the same pictures. I then asked for their opinion regarding their categorisation and the one from the system. Do they see a problem in any of it? The survey has been available for others for one week. In total, I received 30 responses. I could chat with ten persons about their thoughts regarding their categorisation and the categorisation of the program. Most of them work in the service sectors and belong to the generation Boomer and Millenials.

_01_ Conclusion Experiment 2

Looking at the 30 responses, I can see that people interpret many things into one face/appearance, such as gender, labour, age, emotion, beliefs, etc. Clothes and accessories are included and probably as well influenced their categorisation. Women tend to be categorised rather about their appearance: beautiful, tired, emotional or fighter, whereas men concerning their possible labour, e.g., IT, musician, CEO, or ex-Stasi. Only one person tried to categorised the portrait regarding their race. Children are more often defined as "children" instead of their gender.

By chatting with my ten unique participants, I could understand how and why they categorise people in their ways. In the beginning, somebody got offended as they thought I wanted to declare them as unethical. Others told me that their first impression is often wrong, and another even started to question her own binary thinking. But in general, all of them have been very interested in why the programme is sometimes so accurate and then on the other hand utterly wrong. For them, the program is obviously limited and cannot act differentiated. However, some tend to legitimise it as long as it is neutral. But what is a neutral perception?


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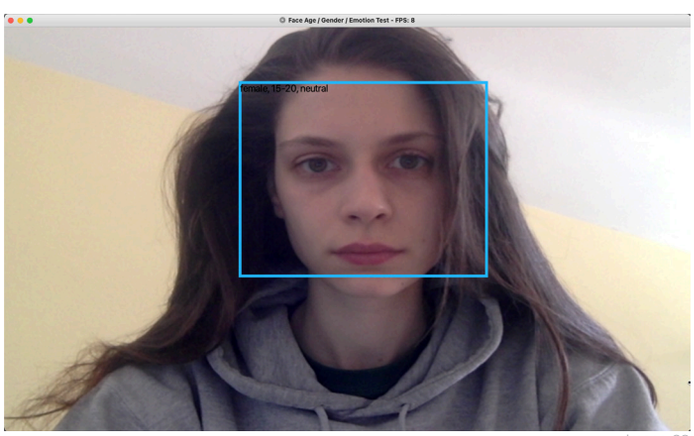
_05.04_Live Categorisation

For my third experiment, I wanted to use a Facial Recognition system in the real world. For this, I used a program made available by Florian Bruggiser. The program works with Processing and can categorise human faces live. The input is provided by a webcam or similar, processed through the computer, and creates a live output. This means that the webcam films the environment, the program perceives and categorises the human face and creates a live output that clarifies the detection for the (passive) user. The detection is visible by framing the face with a blue square and adding the categorisations in words to it. Whereas the possibilities of categorisation are as follow:

gender = “male”, “female”
age = “0-2”, “4-6”, “8-12”, “15-20”, “25-32”, “38-43”, “48-53”, “60-100”
face expression = “neutral”, “happiness”, “surprise”, “sadness”, “anger”, “disgust”, “fear”, “contempt”.

Before I used the system live on strangers, I first tested it on myself. Here, I have to mention that I am female, 26, and my facial expression is often in a rest state, neutral. According to the system, I look like a male, 25-32, neutral if my long hair is pulled back. On the other hand, I am female, 15-20, neutral if my hair is open. I was surprised, as I did not think that hair can make such a difference. Through smiling, I could trigger another categorisation but none of the others. I conclude that the system is not always right, and I wondered what others think of it.



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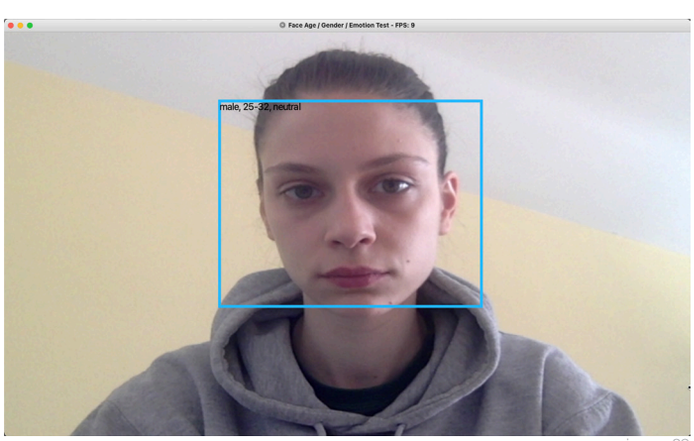

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_01_ Conclusion Experiment 2

For my live experiment, I had the opportunity to use a studio window with screens already installed, facing a busy street in Basel. I, therefore, used this chance to try out the program in real life with people walking by. I set up a camera and displayed the filmed scene onto a screen so that every pedestrian had the chance to have a look at themselves and their categorisation. My goal at this moment was to see how people react to being categorised by a system. Will they understand the context of being filmed and classified at the same time? Are they ok with their categorisation? Do they have a problem with it?

In the beginning, people did not notice what was going on. This probably as everyone is in a rush in the morning. In the meantime, the system captured some human and other interesting faces like a window, a bicycle or car rims. The categorisation was not always precise. As I noticed that people are more looking at what was going on inside the studio than on the screen, I vanished for 30 minutes and let the program run. Through this more people got attracted. However, I had no possibility of talking to them. Later that day, I had the chance to chat with a categorised person. The system first perceived him as a female, 25-32, neutral, and after a few second, as a male, 25-32, neutral. We were not quite sure why the system detected him in the first run differently, as he did not change his appearance like me in my first try out. Nevertheless, the variation in his categorisation was not a problem for him. He was more curious about the system and how it worked, and where it is in use. Later on, he also mentioned that it would be nice to provide some privacy instead of detecting and categorising, e.g., blurring or similar.

As I was not satisfied with the first try of the third experiment, I took the chance to redo it and search for notable differences. On another day, I set up again the system and added two more screens where the outside is displayed. Here I hoped that more people would get attracted to it. After a few minutes, I talked to a man who was very interested in the installation. We had a long conversation about how we have to be cautious while implementing such a system in our society. There are already significant problems in different parts of the world, such as in the UK and the USA. Later on, I vanished and observed the installation and its users from a bit further away as I noticed again that people are more interested in what is going on inside the studio. To get their feedback, I hung up QR - Codes of a Survey with the question to explain what they experience. Mostly they had fun and were playing around. However, none of them seemed to be highly bothered. Nobody used the QR Codes.

_01_Conclusion Experiment 3

For two days, I had the chance to use an open-source FRT in Basel, Switzerland, on pedestrians walking by a studio window. Screens facing the street are displaying what is going on outside. If a face is perceived, a blue rectangle occurs around it with their categorisation written in it. Through the installation, I intended to observe people's reaction to being categorised and filmed live. I was curious and looking for a discourse with the (passive) users. Because many looked at me inside the studio, I vanished and recorded everything. The system has detected around 100 people, also countless other interesting faces such as windows, car rims or something on the asphalt not recognisable for me in the recording as a face.

With two of the categorised persons, I had the chance to talk about my project, intentions and generally inform them about AI and the implementation in today's society. They have been quite interested in where such systems are already in use and for what. Further on, one mentioned that he rather liked to be blurred out than detected by the program. Other categorised pedestrians seemed not to be bothered by what is happening or just have not noticed it at all. None of the (passive) users actively had said something against it or showed in any way a disagreement visible in the recordings.

Now I started to question why these people did not have a problem with being filmed and categorised in public. I can think of many reasons why my experiment did not bother many. Indeed the location, the time, the people itself and other factors play a role. Maybe we are already manipulated by the media and fiction of different countries and therefore dulled out to recognise what is possible with FRT? Further on, I questioned again how I had not gotten anyone's permission to get recorded or categorised and wondered who those people really are.

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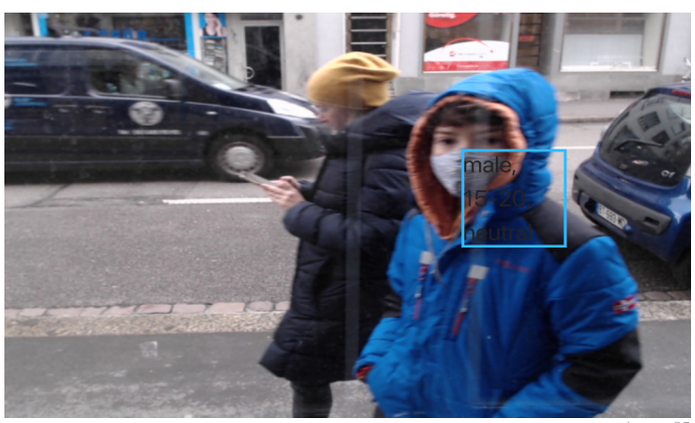

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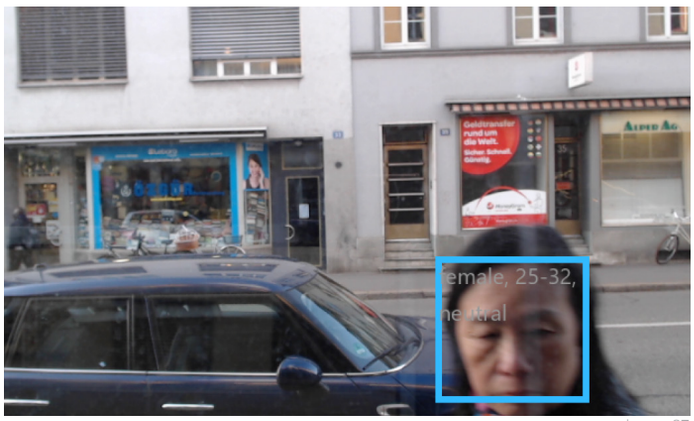

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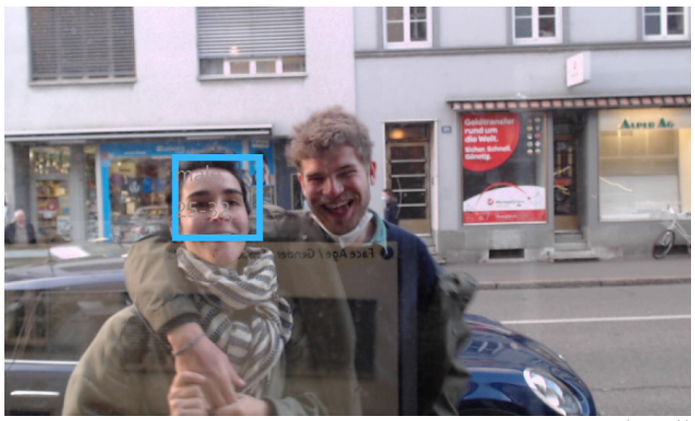

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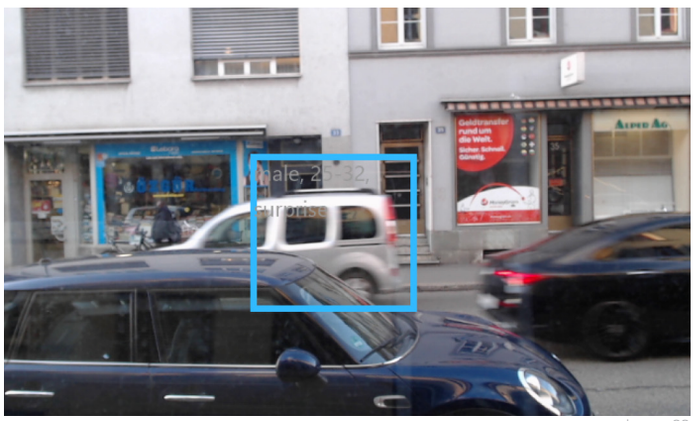

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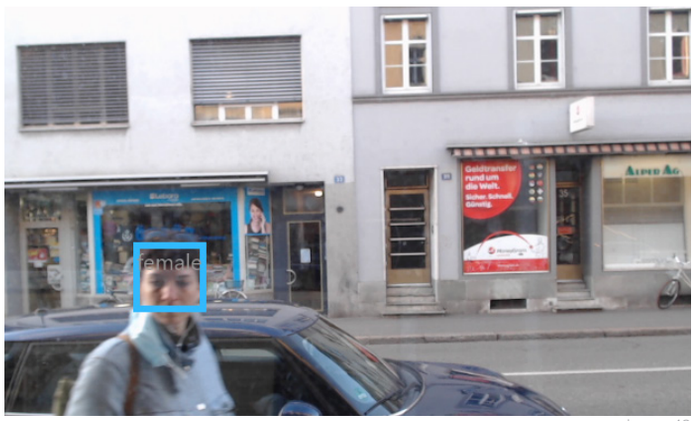

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06_PROJECT DEVELOPEMENT

_06.01_Prototype 1:

At the beginning of my Bachelor Semester, I questioned what impact AI will have on our society and how I could visualize the future with ML. I intended to work participatory and wanted to co-create a future with others. However, as we do not know what will come, we only can speculate about it and try to predict a possible future. Therefore I created a prediction tool called “possible futures generator”. The generator is made in processing and includes 128 predictions of others I could collect ahead through my survey. Before using this tool, the user should imagine a possible future and then see what my tool will generate. I was curious what prediction others will have and if they might include AI as well. Further, I wanted to show that even if we imagine one future, another one is possible.

Through this little prototype, I could see that nobody included AI in their speculations. They instead thought about a decrease of technology “no cars” and improved today’s society “social justice & clean planet”. Another comment which stuck with me has been that “one’s desired future might be a nightmare for somebody else”. Further on, I got questioned how I want to go further with the collected data of others. The received feedback has been helpful and led me to question how I might be able as an Interaction Designer to increase the awareness of AI in our society.

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_06.02_Concept and Angle

I am convinced, that we should be more conscious and informed regarding emerging technology and not use it against us, but for us. Therefore I questioned at the beginning of my project what impact AI will have on us. I was curious about what others think and intended to capture the notion of society. A collection of 150 speculations from people worldwide regarding the future in general and concerning AI is the outcome of my field research. I can conclude that this system surely already has an impact on my participants and that they are aware of its implementation though it seems not so important to them as often named at the end or never, unless specifically asked about it. Therefore I continued looking into a way to accentuate AI's implementation in our society and choose FRT for further social experiments. This because many of us are daily in contact with it. In Switzerland, mainly actively through our phones and in some cantons passively by law enforcement. The experiments have been essential to gain more knowledge about the program. To better understand how I, others, and the system perceive human faces and what others' points of view are regarding this technology. This through embodying it, letting others act as a program, and using one in real life. FRT's perception is subjective because they are trained with data based on human perception. Who would be more significant/accurate in perceiving? Additionally, I wanted to observe people's reaction while being filmed and categorised live in public and get in the discourse regarding implementing this technology and its (mis)usage in our society. This has been important to understand others behaviour in this situation and inform those interested. What I can confirm after conducting my experiments is that people in Basel, Switzerland, do not seem to be highly bothered when FRT is used on them. Still, a notion of interest in the technology is graspable. Indeed, I impacted those I could talk to during this time, which has been a goal I wanted to reach during my project. My participants and I tend to categorise rather quickly in narrow ways, especially if there is more visible of the human than just the face. Biased thinking is predominant in all three parties, and an exact categorisation is not possible.

State of the art in FRT might verify and identify human faces in an image or video. Though, it is yet not able to really understand who the captured person is. To know and understand others own self-perception and classification, the only way is to ask a person directly. This might sound like common sense, but unfortunately, people rely more and more on such systems or their own bias perception without asking the individual. In the last few months, I encountered more than 500 people and tried to categorise them by myself, through others or a system, but never asked for their self-perception too. How would one perceive themself? Who are these people, and how would they categorise themselves? Do we know our true self? Our self-perception is constantly changing. Who someone was yesterday might not be the same as who they are today or will be tomorrow. Daily various happenings can affect our self-perception, and a discrepancy can arise within ourselves.

According to E. Tory Higgins self-discrepancy theory, there are three basic domains of the self. The actual, the ideal and the ought self, which include attributes you or somebody else believes you actually have, would like you to have or believes you should have. He further claims that we are motivated to reach a condition where our self-concept matches our personally relevant self-guides.[23] But how can we reach such a condition? Duval and Wicklund argue in their theory of objective self-awareness that increasing self-focused attention raises our awareness of discrepancies between our real self and personal standards of correctness. This can, later on, cause a motivation to reduce the discrepancy.[24] Inspired by german photographer August Sander who used new technology to create a scientifically important documentary work with "Menschen des 20 Jahrhundert", where he was using a camera to capture humans, and further categorised them by their (dis)abilities. I wondered if I can use newly released ML technology to conduct a human machine perception study, which is not used insufficiently to categorise people but to challenge our perception of ourselves and others.

As humans primary communication tool are spoken or written words, I intended to collect others self-perception to use it further with a text to image program called Aleph2Image (Delta)[25]. The open-source ML program is made available online to everyone by Ryan Murdock (Twitter: @advadnoun). It is accessible over google notebook and a fusion of two, partially made available for the public, neural network models by OpenAI, DALL· E (decoder, encoder) and CLIP. The difference between these two models is that DALL·E is a 12-billion parameter version of GPT-3 (Generative Pre-trained Transformer 3) and creating images from text descriptions. Whereas CLIP (Contrastive Language-Image Pre-Training), on the other hand, has been trained to connect images and text. They are trained on a dataset of text-image pairs collected from the internet - obviously biased data.[26, 27] Alep2Image, as a combination of them, generates images from text input (max. 60 words). Here the input as well the output is based on human perception and therefore subjective.

Could this program generate recognisably visualise our self? Can I use it to improve one's self-perception? Using it for my study, I can contribute a part to the research of this emerging technology and provide insight into this field and themselves for the people I want to involve. Important now is to create an experience where one can reflect on themself. Here I imagine creating an installation or a process where one can focus and reflect on themselves. Like others we, function as bystanders while focusing on ourselves, trying to analyse ourselves based on our undisguised behaviours and/ or the conditions they occur.[28] If further a visualisation based on our observation of us, mixed with others' perception, is available, we might understand and perceive ourselves better - and maybe later on as well others. Therefore I can imagine the images are helpful to reflect on one's self. What I need to carry out my human machine perception study are participants, preferable strangers, because I think I would be too biased with people inside my circle or with myself. My participants should be motivated to stay in contact for longer, have interest in my research and their self-perception. I will serve as a mediator between the human (participator) and the machine (Aleph2Image) and distribute the generated images over E-Mail or other communication tools.

_06.03_Prototype 2:

To build up my human machine perception study and further test my concept, are participants needed. Here it is important that they should be willing to give me their self-perception, a picture (which serve as a comparison to the generated one) and stay in contact for some time. Essential for me is that I, in the best case, would not know the person because I want to have a fresh eye on their self-perception. Therefore I went outside and searched for possible participants. Even if the current situation might make it tricky to work with others, I am optimistic. In the beginning, I had no difficulties finding people interested in participating. I openly asked strangers if they have time for my research and got their permission to use their data (voice recording, picture of some participants and E-Mail). Here I had the chance to talk to diverse people from different parts of the world, such as Switzerland, Portugal, Ukraine, Cuba, and Ethiopia.

Even if not everybody I spoke to was willing to participate, I received good feedback regarding my idea. One of the most significant challenges, however, during the process has been the language barrier. Those who have not been fluent in German but still wanted to participate recorded themself in their mother tongue. Therefore, I sought help afterwards to translate the recordings by a native speaker of those languages I cannot understand. After I collected their insights, I transcribed (or let it transcript) their voice to text, which I used as an input for Aleph2Image (Delta) to visualise their self-perception. Later on, I sent the generated pictures to the participants as I was curious if they feel represented and could recognise themself in them. Their feedback is crucial for further analysing if the system can recognisably visualise one's self-perception.

image 58

"*My name is Didier. I am not a very visually oriented person. I am a sound engineer. I am a male Western European, middle-aged. I originally studied political science and philosophy in Zurich.*"

image 59

"*I am not a very visually oriented person. I am a sound engineer. I am a male Western European, middle-aged. I originally studied political science and philosophy in Zurich.*"

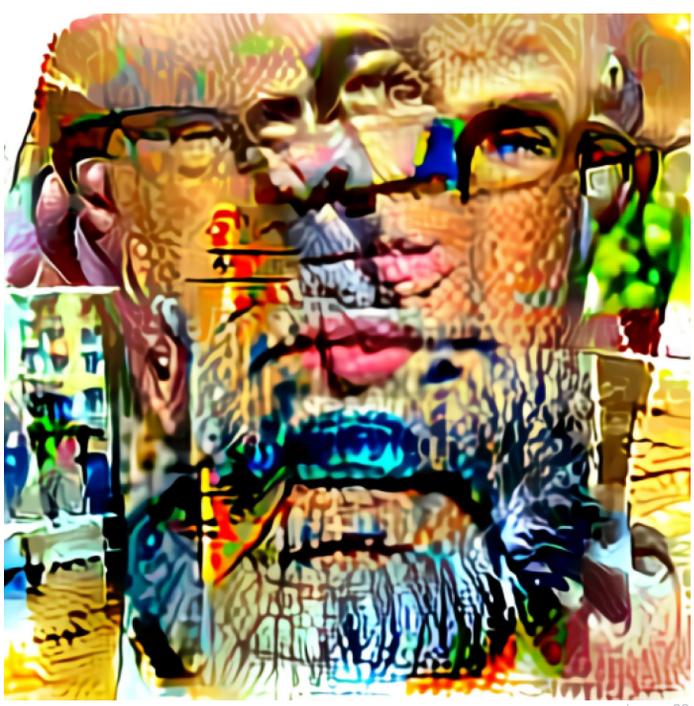

image 60

"*male, mid-50s, eurasian, medium height, normal weight/slim, wears glasses, formerly dark straight hair, now bald, 3-day beard (slightly greying, blue eyes, normal, not protruding ears, rather prominent chin, slightly wide nose, narrow lips, no major scars or tattoos.*"

_01_Findings Prototype 2

I collected nine individuals self-perception. However, only a few of them stayed in contact... and then none. Interesting to me while talking to them has been that many had difficulties categorising or describing themself in a more significant way. One mentioned that if I asked her the same thing tomorrow or in a week again, she would probably have a different self-perception.

My first participant, has been the one who stayed the longest in touch with me. He could not recognise himself at all in the first generated picture and Therefore sent me a more detailed self-description back. The second image did not satisfy him either. To see what kind of a difference a name can make, I left out for the third generative process his given name. But as well, this did not please him. In his case, the program has not been able to represent him in any way. It is interesting to see here, that I as an outer observer, can see similarities in the first image and his portrait, but this is, of course, my subjective perception. Additional, I would not be able to say if it as well mirrors his true self. Despite that, my opinion is not countable here. The few feedback* received from the other participants has been spare and varied from "*This is clearer I can see myself in this image*" to "*mhh ok, not really me*". As none of them further stayed in touch, I could not continue with my first intention of investigating how the program functions and using it as a self-reflection tool.

*full feedback of first participants in annex

_02_Conclusion, Detour & Next Steps

To work participatory is not easy if the other party does not fully commit to the process. The few received feedback has been helpful nevertheless. Interesting here is that some people felt represented and others not. I still could see some potential in using the generated images, the recordings of others and FRT to create an immersive experience or a tool where one can reflect on their (self-)perception. As a first immersive experience, I build up an installation where one can see themselves categorised through FRT and listen to others self-perception while the generated images are visible. Through this, I wanted to provide knowledge about how a system perceives them and how strangers categorise themself. The generated images are an additional layer that should express a different perception made possible through today's technology. The feedback received on the installation has been, that it is intense to hear and see others self-perception in two layers while looking at oneself, categorised through a program. It provided a notion of uncanny feeling and let the visitor question their perception. However, the aspect that one can not have a generated image of their self-perception has been missing.

Criticism received from others that there is no significant contribution when just asking for somebodies self-perception for once and then loading it into a system that I have not created by myself let me question what I want to achieve. I doubted myself and my work heavily. Therefore I looked for another way to show the implementation of AI and raise awareness. Here I had a closer look at how police departments in Switzerland are more and more implementing FRT to observe sports events (before the pandemic) and search for possible criminals. As well as the data collection for ML training sets. I could imagine creating a prototype that critically questions the implementation of such technology in our society. How much security is your privacy worth? However, this would as well be an exciting way to look further into, but I received as well the feedback that I might not start with something new almost at the end of my journey.

Because of this, I started again looking into my first notion of using Aleph2Image to represent one's self-perception. At the beginning of my BA, I was already interested in my participants and who they are. Because of this, I asked the following questions in my surveys. "Who are you? Tell me something about you?" Even if these questions have been optional and answered anonymously, I could collect 21 self-perceptions. With these insights, I extended my human machine perception study and continued investigating how the program generates and interprets their self-perception. Interestingly, in some images, faces or even a figure comparable to a person are pretty well visible in others vaguely. In some, the generation is too abstract. However, it is always possible to draw a line between the chosen words of the individual and what is visible. My next steps are to find again participants and create an experience in which the program can be used as a self-reflection tool to improve and visualise one's self-perception.

image 61

"*Gastronome hotelier and host with a passion for the service industry very affine when it comes to customer service.*"

image 62

"*Basel, over 60, academic"*

image 63

"I was born and raised in Taiwan for 25 years then I moved to NYC. After living New York for five years, the culture shock has been the biggest impact for me, specially in my career path. It also became a motivation for me to chasing my goals."

_06.04_ Prototype 3:

By looking at the answers of my first few participants, I noticed that sometimes the generated images but as well their own spoken words are not recognisable for them. This, as their self-perception, is changing daily due to various internal and external influences, which can lead to personal discrepancies. Often some individuals also had difficulties explaining who they are at the exact moment. Therefore I thought that questions provided beforehand focused on today's self, used daily, could help to reflect better and improve one's self-perception. Because change happens over time, I wondered what the best time frame is to test my concept. It would be very interesting to conduct my study over several weeks or even months, and in comparison, the self-reflection part is accomplished in different iterations such as every day, every two days or only once a week. However, for my project, I decided to create an experience that is practicable in a week, for five days, every day. Here I hope that the everyday practice of self-reflection, including an image, as a result, can provide a better inside view for the participants self, as well to see, how the program (the AI/ML) functions.

To continue with my human machine perception study, I searched again for participants. This time in my social circle as I hoped those people are more reliable. Three friends of mine have been interested in my study. They are all Millennials and working in the field of renewable energy, architecture and interaction design. The whole correspondence is over WhatsApp as it is the easiest way to stay in touch with my users. At the beginning of their self-perception journey, I provided them with information about the three basic domains of the self and instructions. What they need to take part in my study is an intrinsical motivation to reflect on oneself. Around 30 minutes a day for five days, where they can take time for themselves and a mirror or devices that can be handy to display oneself - but this is optional. Before they start with their journey, I asked them to write down any attributes which they possess. If they wished, they could as well order them, e.g., like, dislike, improve. Through this, I wanted them to understand better how they see themself in general. After that, they can start to reflect on themselves. Reflective questions should help them during the process.

What I needed from them at the end of each day is a summary of today's self-perception, which I use as an input for the program. Here I act as a mediator between the human (my participants) and the machine (the program). Every time I receive a summary, I generate their self-perception over the program and send it back to them. At the end of the journey, I will present my participants with their collection of self-perceptions (text + image) and asked for feedback regarding the experience.

Who are you today?

What did you like or dislike today?

What defines you today?

What did you do today?

How do you perceive yourself today?

_01_individual 1

image 64

"*Today I am a silent friend who would like to be louder. But I can't do it, because I am heavy: the world makes me heavy. My potential is dampened by a vast abundance of lack of direction. The non-existent direction defines me. It is my excuse and approval at the same time. It annoys me. I like that.*"

image 65

"*Today I am a wanderer. Like a butterfly, I let myself drift, for I am restless. When something annoys me, I move on until I almost reach contentment. I find myself with random friends but also sitting alone by the Rhine. This process repeats itself until I fall tired into bed.*"

image 66

“Today I am the mirror of others. I ask questions and seek progress, because positioning is the definition of myself. What robs me of energy I make up for with absence, if I manage to withdraw for a moment.”

image 67

“Today I am an executive machine. I do what I am told to do. Sometimes I try to break out of this pattern, which I sometimes succeed in doing. Sometimes I rest in this position, free of any responsibility. A curse and a blessing at the same time.”

image 68

“Today I am a patient listener in the shadow of others. Learning process and boredom mix into a colour unknown to me. And then, quite unexpectedly, I become louder in quiet moments. That feels strange and good.”

_02_individual 2

image 69

"Today I was moody but in control. Despite my lack of motivation, I pulled myself together and worked. I am grateful for my friends. I feel a bit corny and childish, but I am trying to make peace with these qualities of mine. I didn't feel very beautiful today, but that wasn't very important. A mixed day."

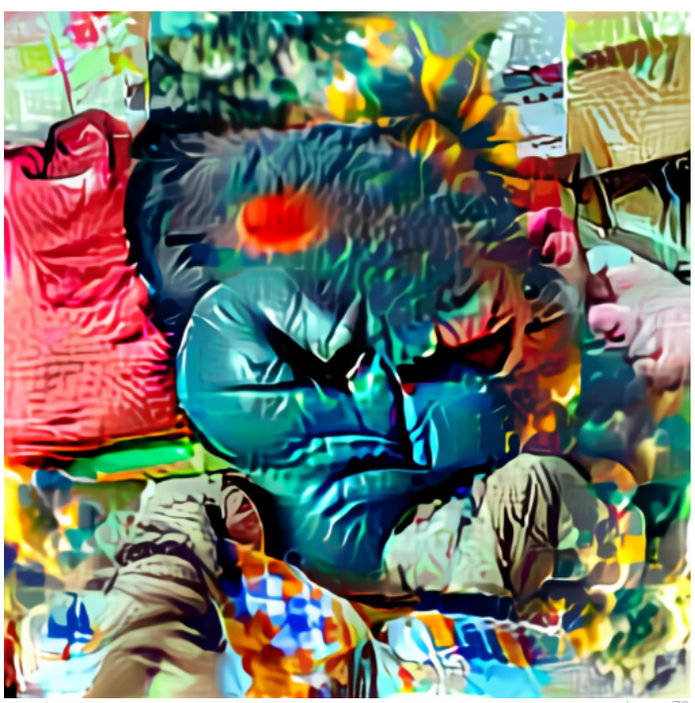

image 70

"Today I had a great time. Enjoing the simple things of life like sleep, company and sun. In the evening my mood switched to angry. Angriness at nothing concrete but an accumulation of things. And especially angry at myself that I am angry for no reason."

image 71

"Today I felt like a stone. I just wanted to stay in bed and do nothing. I allowed myself to get lost in my emotions for a while, what I appreciate. After that I stayed in bed but was a productive writter. But I think I was a bad friend today, for that I feel sorry."

image 72

"Today I only did heart-projects. Cultural activities, spending time with friends and eating good food. But I did not treat my body very well. I got a headacke from the sun and backhurt from lifting to heavy. I feel me-oriented and unproductive."

image 73

"Today I was reflecting a lot I was able to step outside myself and evaluate my situation from this external perspective. This led to a more distinguished and unemotional conclusion. I was a good friend cause I could take the time to help and meet people."

_03_individual 3

image 74

“Male consumerist living in the city who makes provisions for later. I like to watch birds and get annoyed by cigarette butts that pollute the Rhine.”

image 75

“Office rubber with technical skills who is looking forward to the weekend. I was able to organise something in a short time and my lunch was a highlight.”

image 76

“Today I am a year older than yesterday. I’m becoming a more and more independent office goon and family man because of birthday celebrations with family. My red jacket defined me today. My workmates in the office sang cringy happy birthday and gave me a pocket knife. I already knew that because I had to send it to others as well.”

_ 04_Findings Prototype 3

All three participants have been enjoying their personal process. They liked to reflect on themselves daily, even if one usually not wants to be the centre of attention. The attributes in their orders changed from everyone during the process. They looked forward to receiving their daily images in those each of them could recognise parts of themselves, which provided them with an additional layer of their daily self-perception. They liked to be able to look back in time and see what kind of changes have happened. An improvement of one's self-perception has not been achieved over five days but an increase in awareness regarding one's inner state. This can surely lead to an improvement if exercised longer. If though the process should be done daily has been questioned by one of my participants. She was not quite sure if it might be better to do this every three days or just once a week. This is because it is sometimes hard to reflect when not many things have happened or simply when time and energy are missing. But maybe this is exactly the vital part of my experience, the daily aspect. To reflect, even if nothing notable has happened and to oblige and take time for oneself. One person stopped after day three because of lack of time. My participants would like to continue the experience because they are still motivated to reflect on themself as well to see future changes that are also visible through the generated images – but not everyone daily.

Simultaneously to my participants, I did the journey too. My own experience during this time is obviously biased. Thus it was important for me to understand better my own process. By focusing on myself for five days straight, I could reflect on some situations and my selves in them better. The generated images as a visualisation of my self-perception have been quite particularly and almost scary. It let me question some things, and I started to think that I want to change my text (self-perception) because I did not want to be the image. Regarding the iterations, I have to admit that it is pretty hard doing it every day.

07_PROJECT CONCLUSION

_07.01_Intention and evaluation summary

My primary intention with this project has been to provide knowledge about AI's implementation today, raise awareness, and give food for future thinking. I questioned what impact AI will have on our society and therefore tried to grasp the notion of many through different methods. When speculating about the future, people often connect their imagination to present happenings and tend to name AI as one of the last things if mentioned at all. Therefore I wanted to investigate further how I could accentuate the implementation in today's society and choose FRT for further social experiments. Here I primarily focused on the perception of the program and questioned if it would be more accurate/ significant than humans - if based on human perception. An outcome of my experiments is more than 500 captured and categorised people, which I never asked for their self-perception. They are more than the categorisation I, others or a program gave them. Therefore I started my human machine perception study. The intention here is to investigate if the open-source text to image ML program, Aleph2Image, can be used as a self-reflection tool combined with a self-focused process. To prove my concept, I examined in a participatory approach others self-perception and the generated images in different ways. My study has three separate parts.

_01_Part 1: How do you categorise yourself?

This part contains 9 individuals self-perception. At the beginning of this part, the intention has been to see if a text to image program can representable visualise one's self-perception. Would this person be able to recognise themselves in the images? Out of my 9 participants, 3 felt represented, 3 did not feel represented, and 3 provided me with no feedback.

_02_Part 2: Who are you, tell me something about you?

This part contains 21 individuals self-perception. Because none of my first participants stayed in touch with me, I looked into a different way to examine more self-perceptions with the program to see if it would representable visualise one's self-perception. Here I used the answers of 21 people who filled out my Future/AI survey during my research at the beginning of the BA. The question is, "Who are you, tell me something about you?" These answers have been provided anonymously. Though, they helped me to understand the program better. It is interesting to see how certain words are quite obviously visible in the images. An approach of a person's face is visible in 11 images. A figurative approach is visible in 3 images, and 7 are a mixture or very abstract, where nothing looks humanlike. However, this does not mean it is not representing what the person wrote about themselves. This evaluation is based on my own subjective perception as I could not trace back the owner of the self-perception.

_03_Part 3: Who are you today?

This part contains 3 individuals self-perception, collected daily over three and five days. Through my first participatory approach, I could see that people have difficulties describing their true self in the exact moment and their self-perception is changing daily. Therefore I created an experience where one can reflect on themselves for five days, whereas each day, a summary of their self-perception is used to generate an image. This image should further help to improve one's self-perception. The feedback of my participants here has been crucial as I wanted to prove that a text to image ML program could be used as a tool to improve and visualise one's self-perception, which might improve their general perception of humans. Two of three people reflected on themselves five days, while one person reflected on three days. The third persons stopped after day three due to lack of time. All of the participants enjoyed their self-focused reflection process and would like to continue, but not daily. The images contained parts of their self-perception, and therefore they felt represented in some ways. They liked to be able to look back in time and compare the pictures and their past selves. An increase of awareness of one's self-perception has been achieved, and if continued for longer, they think indeed as well an improvement of their self-perception.

_07.02_Conclusion and Future Steps

Out of my project, I can conclude that society is aware of implementing emerging AI technology. Thus it seems not so important to them. While speculating about the future, we must include AI as an additional variable and be better informed. I could not find an answer to my first research question through my field research. It is no longer the question of how AI will impact our society - because it already has a significant influence on us - rather if we as a society accept the changes that come with it. - Through this, only more questions arise, which can be answered in another thesis. Through my social experiments, I can say that an objective categorisation of a human face is neither achievable through me, others or a program as it is always based on human perception and, therefore, subjective.

One's self-perception is constantly changing through various happenings during the day. So before we start and try to categorise others with our biased perception, we should begin to try and understand our many selves first. By conducting my human machine perception study, I had the chance to investigate a different usage of emerging AI technology and text-to-image ML programs. Suppose we use Aleph2Image as a tool to visualise one's self-perception, in combination with a self-focused process. Is it possible to raise awareness of one's self-discrepancies, suppose conducted for longer, surely as well an improvement of self-perception and the perception of others. Future steps would be to iterate the self-focused process and make it more accessible. Here I would like to get in touch with therapists and participants to co-create a service, including individual adaptation possibilities for the user. For my personal future steps, I want to be able to understand algorithms and coding better and look forward to research and learn more in this field, which shall lead to me being able to implement such codes in a way that it is more accessible to others who have no clue about it. Here I am the mediator between the human and the machine.

_07.03_Contribution and Learnings

The last few months have been a continual repetition of observing, reflecting, planning and acting. I had the chance to get an insight into the sometimes ungraspable topic of AI and the usage of FRT in our society. Further on, I could use and examine an open-source program to conduct my human machine perception study in a participatory approach. My primary intended contribution, to make the invisible visible, raise awareness and provide knowledge for those interested, is achieved. I could impact these people who took part in my casual talks, discourses, workshops, as well as the people I could talk to during my second and third experiment. A lovely proof is that one person once mentioned that he is more aware of AI and questions its future since he conducted my survey and participated in the workshop. To know, though, what impact AI will have in the future on our society is something I could not find out. While speculating about the future, we have to include AI as an essential variable. We only can predict, but we will never know for sure what will come.

Additionally, I can contribute to Ryan Murdock and the creator of DALL·E and CLIP and their research with my study. To this day of writing, I received no answer from them. Last but not least, the project contributes to me. Despite facing major setbacks like losing my participants and dealing with mental health issues during the previous few months. I learned a lot about AI, human behaviour, and self-perception and could achieve my personal goals. I am still interested in the topic of AI and want to continue working in this field.

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{25} https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGlvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr //07APR21

_08.10_Infographics

{infographic 1} Kaplan, A &. Haenlein, M (2019) Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence, Business Horizons (2019) 62, 15—25., Danuka Ana

Tomas

_08.11 Images

{image 1} https://metalabharvard.github.io/projects/thefutureofsecrets/ //06MAR21

{image 2,3} https://www.masswerk.at/eliza/ //03MAR21

{image 4} https://excavating.ai/ //25MAR21

{image 5,6} http://www.memo.tv/works/optimising-for-beauty/ //07NOV20

{image 7,8} https://www.lozano-hemmer.com/zoom_pavilion.php //25MAR21

{image 9} Danuka Ana Tomas, Future Trash //2021

{image 10 - 12} Danuka Ana Tomas, Future Workshop Offline 1 //2021

{image 13,14} Danuka Ana Tomas, Future Workshop Offline 2 //2021

{image 15} Danuka Ana Tomas, Future Workshop Online 1 //2021

{image 16} Radical Design, Future Workshop Online 1 //2021

{image 17} Nicolas Matter, Future Workshop Online 1 //2021

{image 18} https://bit.ly/3uKmilE // 24MAR21

{image 19} https://https://unsplash.com/photos/n9R0MN3XGvY//20MAR21

{image 20} https://unsplash.com/photos/DItYlc26zVI //20MAR21

{image 21} https://unsplash.com/photos/GY5gWDimEyg //20MAR21

{image 22} https://www.freeimages.com/photo/an-old-man-1435337 //20MAR21

{image 23} https://unsplash.com/photos/-ByDh99Sfww //20MAR21

{image 24} Kleinlützel, SO, 1996, Vesna Tomas

{image 25} https://unsplash.com/photos/qgGYtPCg0Vc //20MAR21

{image 26} https://pixabay.com/photos/woman-fashion-beauty-glamour-1274056/ // 20MAR21

{image 27} https://unsplash.com/photos/WC7KlHo13Fc //20MAR21

{image 28} Danuka Ana Tomas, //13MAR21

{image 29} Danuka Ana Tomas, //13MAR21

{image 30} Danuka Ana Tomas, //15MAR21

{image 31} Danuka Ana Tomas, //27MAR21

{image 32 - 35} Danuka Ana Tomas, //17MAR21

{image 36 - 55} Danuka Ana Tomas, //27MAR21

{image 56 ,57 } Danuka Ana Tomas, //27APR21

{image 58} Image generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 07APR21

{image 59} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 13APR21

{image60} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 10APR21

{image 61-63} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 28APR21

{image 64} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 01MAY21

{image 65} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 02MAY21

{image 66} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 03MAY21

{image 67} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 04MAY21

{image 68} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 05MAY21

{image 69} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing

&authuser=0#scrollTo=7EuUz-ICNKUr // 07MAY21

{image 70} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 08MAY21

{image 71} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 09MAY21

{image 72} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 10MAY21

{image 73} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 11MAY21

{image 74} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 30APR21

{image 75} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 01MAY21

{image 76} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 02MAY21

{image 77} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 10MAY21

{image 78} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 08MAY21

{image 79} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 10MAY21

{image 80} mage generated with Aleph2Image, https://colab.research.google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing&authuser=0#scrollTo=7EuUz-ICNKUr // 08MAY21

{image 81} mage generated with Aleph2Image, https://colab.research.
google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing
&authuser=0#scrollTo=7EuUz-ICNKUr // 08MAY21

{image 82} mage generated with Aleph2Image, https://colab.research.
google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing
&authuser=0#scrollTo=7EuUz-ICNKUr // 09MAY21

{image 83} mage generated with Aleph2Image, https://colab.research.
google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing
&authuser=0#scrollTo=7EuUz-ICNKUr // 11MAY21

{image 84} mage generated with Aleph2Image, https://colab.research.
google.com/drive/1oA1fZP7N1uPBxwbGIvOEXbTsq2ORa9vb?usp=sharing
&authuser=0#scrollTo=7EuUz-ICNKUr // 09MAY21

09_ANNEX

_09.01_Experts Interview

Interview with Dr Dorothea Baur - Ask the expert // 31MAR21 (translated from Swiss German to English)

Dr Dorothea Baur is an expert with many years of international and interdisciplinary experience in the field of ethics at the interface between business, technology, society and sustainability.

Host: Danuka Ana Tomas (D)
Guest: Dr Dorothea Bauer (B)

D: How do you imagine the future in general?
B: Oh, what time period, 10, 20, or 30 years from now?
D: You can define this by yourself. That is your future that you imagine.
B: Well, I imagine it to be digitalised, even more than today. I imagine it to be networked. But I also imagine it to be anonymised at the same time. Because a lot happens through technology instead of direct contact. Paradoxically, also with less privacy. Anonymised but less privacy. I imagine it very much trimmed to efficiency. Not only through technology, which is mostly about optimising efficiency. Regarding the consumption of resources - that's the other issue, concerning the climate crisis - that means efficiency is becoming an even bigger issue, conserving resources. Technology is being used to achieve this goal.

D: How do you see the future specifically in terms of artificial intelligence?
B: Well, I see it as a path that has its ups and downs. I don't see it as a linear progress in which AI becomes more and more "intelligent". There will always be effective and apparent quantum leaps. Then there will also be disillusionments because you realise that one thing is the technology that delivers what it promises. The other is the reception of technology by society. In other words, society's acceptance. One is what the engineers develop, and the other is how we deal with it. I see technological progress. Technological progress will undoubtedly happen, but whether society is prepared to see this progress as an enrichment - whether it is also social progress - will be a match decisive in terms of what will prevail. AI will be used increasingly and in a more sophisticated form. But as already mentioned, the implementation does not primarily depend on the technological capabilities of these programmes but on the influence, it has on us humans and whether we want to accept it.

D: Where do you see a problem in implementing facial recognition systems in everyday life?
B: In many respects. One is again the empirical question, can it actually do what it promises? At the moment, there are still horrendous error rates. In a recent report by Candriam Investor Guidance, they advised not to invest in companies that produce this technology. They named interesting arguments - empirical arguments - that make it challenging to implement such systems. One is effective what are they doing, and the other is who is being discriminated against. Often these flaws systematically affect specific populations more than others. The well-known problem of bias against certain ethnicities. Now we have the technical hurdles and the question, do we even want this? A recently published article of mine is precisely addressing such questions. It is not an empirical question but a moral one. Here I see the problem, that it is not clear to me at the moment what purpose, what problems it solves. Are there really effective problems that make our lives so difficult and cause harm and suffering that this technology can solve? Are people dying of hunger because there is no facial recognition, or could this system solve incurable diseases in the public space? Security is often spoken of, but in Switzerland, we don't have a massive security problem. Another argument is convenience. I think convenience alone... our life is already very convenient as a whole. These are no good reasons to implement ethically questionable technology. That means there are technological, accuracy and legal hurdles. But above all, there are moral concerns. It is not possible to get consent to get into the system from everyone. You don't have an overview. That is problematic for me in several ways. The face, in particular, is the most minimally invasive intervention for identity recognition. Unlike a fingerprint, you have to get the finger, touch the person, collect the prints, and you can hide the fingers. Let's assume that you could read the fingerprints with a camera and then you would know who I am. Then I just do a fist. With the face - apart from the fact that we now wear masks, it's also very often about the eye area, and research is being done to make this technology also work with face masks - you can't hide the face, and you shouldn't want to hide it, see the burka ban. So technological, legal, moral hurdles as well as cultural ones. What kind of attitude do we have in Switzerland towards privacy? We don't have the collectivist model like in China, where the community has always been more important than protecting the individual, and the state is trusted completely. People submit to the state. That's not what we have here.

D: How can you prevent bias in the data sets?
B: These categorisations, the labelling, are done by so-called Ghostworkers. I just tweeted something yesterday - my most influential tweet ever. Through this came out that YouTube's algorithm was apparently blocking LGBTQ+ content. However, it wasn't the algorithm but the Ghostworkers behind it who were enabling the content. These Ghostworkers are often based in African countries where LGBTQ+ is socially ostracised. So, it's the human with prejudice behind it, and the algorithm replicates and exponentials human prejudice. It's very extreme. Another article I just read highlighted the very precarious working conditions of these Ghostworkers, who actually have a huge responsibility, and ended with a call for regulation and fair compensation for these workers. An engineer would say more data, more diverse data sets, more non-binary people, more ethnicities. Still, today we are ultimately convinced that identity or attributes cannot be

imposed from the outside. That identity is a personal choice. That means, even if there is a diverse data set, probably 99.9% of people will label me as ciswoman, white. Still, if my social identity is not binary but trans, then the outside categorisation is very controversial nowadays. You have the identity consciousness. From that point of view, you can't solve it technically, but it's like every attribution of identity. From the outside, it's always an attribution and not an identification.

D: And therefore, no categorisation?
B. Yes, exactly. You also have to be very clear. That everything is very probabilistic in that everything corresponds to probabilities. According to the highest probability, this database of images labels images according to human judgment and pattern recognition, that is, according to what is seen from the outside.

D: Will artificial intelligence still be important in the future?
B: I think part of it is irreversible. We don't want to think it away everywhere either. It is very convincing. So, I also appreciate that - even if it's not unproblematic - recommendation algorithms from Netflix or Amazon etc. - yes, that helps. But the question here is whether we also want to use it there if it's not just purely about consumption decisions. But where it really shakes the foundations of our democracy, where it interferes with fundamental rights. Ones will say that there has been a hype once - rightly so - in the late 10s and early 20s, but it's like... you talk about the AI winter because, at that time, the computing power was lacking to implement everything that was in your head. Now we have that, and there are always these discussions about whether Morse Law will set limits. I don't really know this because I'm not very technically informed. It will, anyhow, certainly not be taken away again. But there will definitely be simultaneous counter-movements by people who consciously decouple themselves from AI applications. For example, digital detox, where people try to withdraw from the whole thing. I hope that there will be critical debates and that we will cultivate a more conscious approach to this and decide as a society where we allow it and where not. That we don't see it as a law of nature that is being rolled over us, affecting everyone which is simultaneously deciding our job and housing market, dating and eating behaviour and the justice system. That we will differentiate here.

D: Companies like Google and Co. are starting to involve internal ethics committees in to the application development. Will they now question what they are releasing to society?
B: There are different cultural divides here. Within tech companies, on the one hand, there is the management - the top - move fast and break things notion. These tech companies' DNA is not designed to be ethical at all, but they feel extreme resistance from the employees. They are on the other hand, the critical force that helps to steer the company. You see this extremely at Google but also at other tech companies. The other question here is what part of the world are we talking about? The US has a total libertarian market-oriented approach to AI. China, which is enforced by the state, and then the EU, which has given itself a social market economy order for data protection with the GDPR. Macron gave a great speech on this two years ago in which he said that it had to be for the people ... by trying to find a balance. As I said, it depends very much on which region we are talking about and whether these companies are forced to change their maxims. This question is the same in business: do we go towards stakeholder capitalism, or do we follow the shareholder capitalism model.

D: Nowadays, people can use different AI applications almost everywhere, could there be an adapted version for each society? An individual code of ethics?
B: I think this is already happening. I think the GDPR has an impact on the way Europeans can use AI. We have very different discussions here than elsewhere. For example, in the US, Clubhouse just takes all the data they want, and then it comes to Europe, and there is an outcry - "Hey, you are violating the GDPR from the beginning! It's actually not compliant with our values, which we codified with this set." The problem here, in my opinion, is that Clubhouse has already factored the potential fines into their business model. It's so brazen, but the fact is that they and other companies in Silicon Valley, the USA, are confronted with different framework conditions than in the EU. From a purely legal and moral point of view, we don't simply accept Chinese applications either. That means, of course, that technology is something borderless that we cannot simply stop at the national border. However, I believe that there are significant cultural differences in the acceptance of applications. It will not just take hold globally, unfiltered, everywhere in the same way.

_09.02_Transcript of experiment 1

--- additional thoughts/information added while transcripting

Experiment one test three. I have the time, 2:40 p.m. - Today is the 24th of March and I will try to be a Program. Precisely I try to be a Facial Recognition Program and I will try to categorise people I perceive during my walk through the city. I have three categories which are gender, age and facial expression. They are divided in gender = male/female, age = child/teenager/adult/old. Hereby I define a child approx. 0-12, teenager approx. 12-19/20, adult 20 - 30/50 and old 50 and up. Facial expression = neutral/mad/happy. Happy if there is a smile on their face. Mad if they are obviously angry like scrunching their faces together or eyebrows and neutral if there is no such thing going on. I start now. I can't record with an image like with video because otherwise the sound would be too bad therefore I only record with the microphone.

To make everything a bit simpler I try to not look around, rather just have a straight gaze and don't turn my head around or similar just looking forward. Another thing I have to mention is that in my first two experiments I had the problem with the masks. I couldn't perceive the person - I mean I could perceive the person and the face but I couldn't categorise it. Therefore I always refer to a person wearing a mask as a "mask" not as a syntax error as I already learned.

I start now.

Male, child, neutral
Male, child, neutral
Male, adult, neutral
Female, old, neutral --- Slow decision
Female, old, neutral
Mask
Mask
Mask
Male, adult, neutral
Male, teenager, happy --- Made me happy too
Male, old, neutral
Female, old, neutral
Female, teenager, neutral
Male, adult, neutral
Male, adult, neutral
Male, old, neutral
Male, adult, neutral
Male, teenager, neutral
Female, old, neutral
Male, old, neutral
Female, old, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Female adult, neutral
Male, teenager, neutral
Child --- Crowd of small kids appeared
Male, child, neutral
Male, child, neutral
Female, child, neutral
Female, child, neutral
Female, child, neutral
Female, child, neutral
Female, adult, neutral
Female, adult, happy
Male, old, neutral
Female, adult, neutral
Male, adult, neutral
Female, adult, happy
Female, adult, neutral
Male, adult, neutral
Mask
Male, adult, neutral
Female, adult, happy

15min

Child --- Child, ok first conclusion I need to differentiate child into baby and child. As I can't tell if a baby is female or male just from looking at the baby. Therefore I take an extra category for baby and a "baby" is like "mask" it is just an extra category.

Male, adult, happy
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, old, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, mad
Female, adult, old
Female, adult/ teenager,neutral --- Age mistake
Female, teenager, neutra
Mask
Mask
Male, adult, neutral
Male, adult, neutral
Male, old, neutral
Male/fe/male, child, neutral --- Gender mistake
Male, child, neutral
Male, child, mad

Female, adult, neutral
Male, teenager, neutral
Male, adult, neutral
Mask
Adult, neutral,male ---? -- General mistake
Adult, neutral, male ---? -- General mistake
Adult, neutral, male ---? -- General mistake
Adult, neutral ---? -- General mistake
Male, adult, neutral
Male, adult, neutral
Mask
Male, adult, neutral
Male, adult, neutral
Male, old, neutral
Male, adult, neutral
Mask
Mask
Male, adult, neutral
Mask
Mask
Male, adult, neutral
Male, adult, Neutral
Female, teenager, neutral
Mask

30 min

Female, teenager, neutral
Male, teenager, neutral
Female, teenager, neutral
Female, old, neutral
Male, old, neutral
Child/Female, child, neutral --- General mistake
Female, adult, neutral
Female, adult, neutral
Baby
Female, teenager, neutral
Mask
Mask
Male, teenager, neutral
Male, teenager, neutral
Female, adult, neutral
Male, adult, neutral
Male, old, mad
Female, adult, mad
Female, adult, happy
Female, adult, neutral
Female, old, neutral
Male, old, neutral
Male, old, neutral
Mask
Mask
Female, adult, neutral
Mask
Mask
Mask

Female, adult, neutral
Male, adult, neutral
Female, old, mad
Female, neutral, adult,/ female, adult, neutral --- General mistake with correction
Mask
Mask
Male, adult, neutral
Mask
Mask
Mask
Male, adult, neu/happy --- Facial expression mistake
Male, adult, neutral
Male, adult, neutral
Male, old, neutral
Male, old, neutral
Male, old, neutral
Female, adult, neutral
Female, child, happy
Child --- schwierig
Female, child, happy
Male, child, happy
Female, old, neutral
Male, teenager, happy
Male, old, neutral
Female, adult, neutral
Mask
Female, old, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Female, adult, neutral
Mask
Mask
Female, adult, neutral
Female, teenager, happy
Mask
Female, old, neutral
Female, adult, neutral
Mask
Female, child, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Female, adult, neutral
Female, old, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Child/ Male, child, neutral --- General mistake
Female, adult, neutral
Mask
Mask
Mask
Female, adult, neutral
Female, adult, neutral

Male, old, neutral

Ohje . sensory overload, to many faces to capture - I can try

Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
… --- Problems with perceiving all faces
Mask
Mask
Mask
Female, adult, neutral
Male, adult, neutral
Male, adult, neutral
Female, adult, neutral

45min

Female, Teenager, /Female, Teenager, Neutral --- General mistake
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Female, adult, neutral
Male, adult, neutral
Female, adult, neutral
Female, adult, neutral
Male, adult, neutral
Mask
Mask
Mask
Mask
Male, adult, neutral
Mask
Mask
Male, adult, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Female, teenager, neutral
Mask
Mask
Female, adult, neutral
Mask
Mask
Mask
Female, adult, neutral
Female, adult, neutral
Male, adult neutral
Female, adult, neutral
Female, old, neutral
Female, old, neutral
Male, adult, neutral
Male, adult, neutral
Mask
Mask
Male, adult, mad
Female, adult, neutral
Female, adult, neutral
Male, adult, neutral
Male, adult, neutral
Female, adult, neutral
Mask
Mask
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Mask
Female, adult, sad --- ??? - There is no sad fuck --- ma/neutral -- Facial expression mistake
Mask
Female/male, adult neutral --- Gender mistake
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Mask
Female, adult, neutral
Male, adult, neutral
Female, adult, happy
Femal, adult, neutral
Male, adult, neutral
Male, adult, neutral
Mask
Female, adult, neutral
Female, teenager, neutral
Female, adult, neutral
Male, adult, neutral
Female, adult, neutral
Fucking Micky Mouse --- shouldn't be able to perceive this though -- General mistake
Mask
Mask
Mask
Female, adult, neutral
Female, adult, neutral
Mask
Mask
Female, adult, neutral
Female, old, neutral
Mask
Female, adult, neutral

Female, adult, neutral
Female, adult, neutral
Mask
Mask
Female, child, neutral
Female, adult, neutral
Male, old, neutral
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Female, adult, neutral
Male, child, neutral
Female, old, happy
Mask
Mask
Mask
Mask
Mask
Female, Teenag/child, neutral --- Age mistake
Mask
Mask
Mask
Mask
Mask
Mask
Male, adult, neutral
Female, adult, neutral
Female, adult, neutral
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Female, child, neutral
Mask
Mask
Female, adult,neutral
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Mask
Female, old, neutral
Female, adult, neutral
Female, adult, neutral
Female, child, neutral
Mask
Mask
Male, adult, neutral
Female, adult, neutral
Mask
Mask
Male, adult, neutral
Male, teenager, neutral
Male, teenager, neutral
Male, teenager, neutral
Mask
Male, teenager, neutral
Male, teenager, neutral
Male, adult, neutral
Male, adult, neutral
Mask
Mask
Male, adult, neutral
Female, child … --- General mistake
Mask
Male, adult, neutral
Mask
Female, adult, neutral
Male, adult, neutral
Female, adult, neutral
Mask

…ok that was hard, did not know what it looked like -- female, adult, neutral --- but clearly i couldn't say in the beginning, as this person was more looking like a skeleton...

Mask
Mask
Female, adult, neutral
Female, adult, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Mask
Female, teenager, neutral
Female, teenager, neutral
Male, teenager, neutral
Male, old, neutral
Female, adult, neutral
Mask
Female, adult, neutral
Male, adult, neutral
Male, adult, neutral
Mask
Male, child, neutral
Female, adult, neutral
Mask
Male, adult, neutral
Male, adult, neutral
Female, adult, neutral
Baby

Female, adult, neutral
Female, adult, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Male, adult, neutral
Female, adult, neutral
Female, child, neutral
Mask
Male, adult, neutral
Male, adult, neutral
Male, child, neutral
Male, adult, neutral
Mask
Female, neutral/adult, neutral --- General mistake
Mask
Mask
Female, adult, neutral
Female, adult, neutral
Female, old, neutral
Male, adult, neutral

Ok, so i'm finished with my third round of the first experiment, yeah … my name is Danuka Ana Tomas and this is research for my Bachelor in Interaction Design at ZHdK.

_09.03_Feedback of first participants

image 77

"I am Laila, a young white woman studying International Relations. What interests me is sustainability and ecological awareness, how I organise my everyday life, what clothes I have and that this does not have a particularly big impact on the environment."

Feedback: no feedback

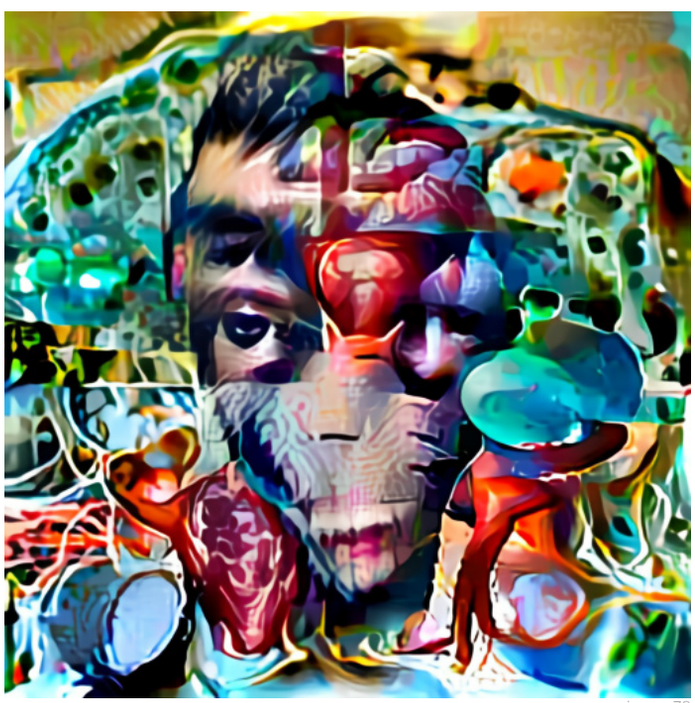

image 78

"I am a multicellular living being. A vertebrate. A mammal. A placenta animal, to be more precise. Probably a primate with cognitive abilities and hopefully free will. I like to prepare food and eat for myself because it gives me meaning and control over my life. I like to make music."

Feedback: "*this is me*"

image 79

"I am an open, curious and fun person. I like to create things or grow a plant like Gearloose. I like to play squash or go jogging. I like to get together with my family and love to eat. I feel like an integrated person in this world."

Feedback: "*This is clearer I can see myself in this image*"

image 80

"I am David, and I am Portuguese, 45 years old. I am married and have one son called Tomas. I work as a barman at the Parterre AG group. I love cooking for my family. In winter I like to watch TV, and in summer I go for walks by the river."

Feedback: "mhh ok, not realy me"

image 81

"I am Mateo, and I am a French-Swiss in German-speaking Switzerland. Maybe even someone who fled from the Romandy. I am a musician, a music student. I see myself as a human being."

Feedback: *"I find it funny to recognise all the elements of my self-perception description in the picture. But I don't recognise myself in the picture at all (and not in my own description in English either, funnily enough.) It's exciting to realise that I would probably describe myself very differently every day."*

image 82

"I am Thy, a confident, open minded, self-assured young Asian woman with a tomboy style and a positive aura. I like to wander mentally and physically to explore the world, people and things. I came from Vietnam to Switzerland and questioning what impact my roots have on my present and future me in the western world."

Feedback: "*LOOl Geil - "geil", with this I mean it suits me. Hahaha, really nice."*

image 83

"I am a creative person. I love everything with theatre and cinema. I like to spend time in the theatre and watch how people act. It gives me new emotions. I am from Ukraine, but my family originates from Russia. I like to paint and play the Piano, Ukulele and love to sing."

Feedback: no feedback

image 84

"My name is Irene. I am from Cuba and concerning my categorization, I don't know. I would say, most likely I am a normal worker. I consider being quite a basic person. And I am an artist. I like to paint a lot and like the art part of the world. But otherwise, I am a basic person."

Feedback: no feedback

BA Thesis _ Danuka Ana Tomas