Strategies to Inform the Swiss Public on Artificial Intelligence

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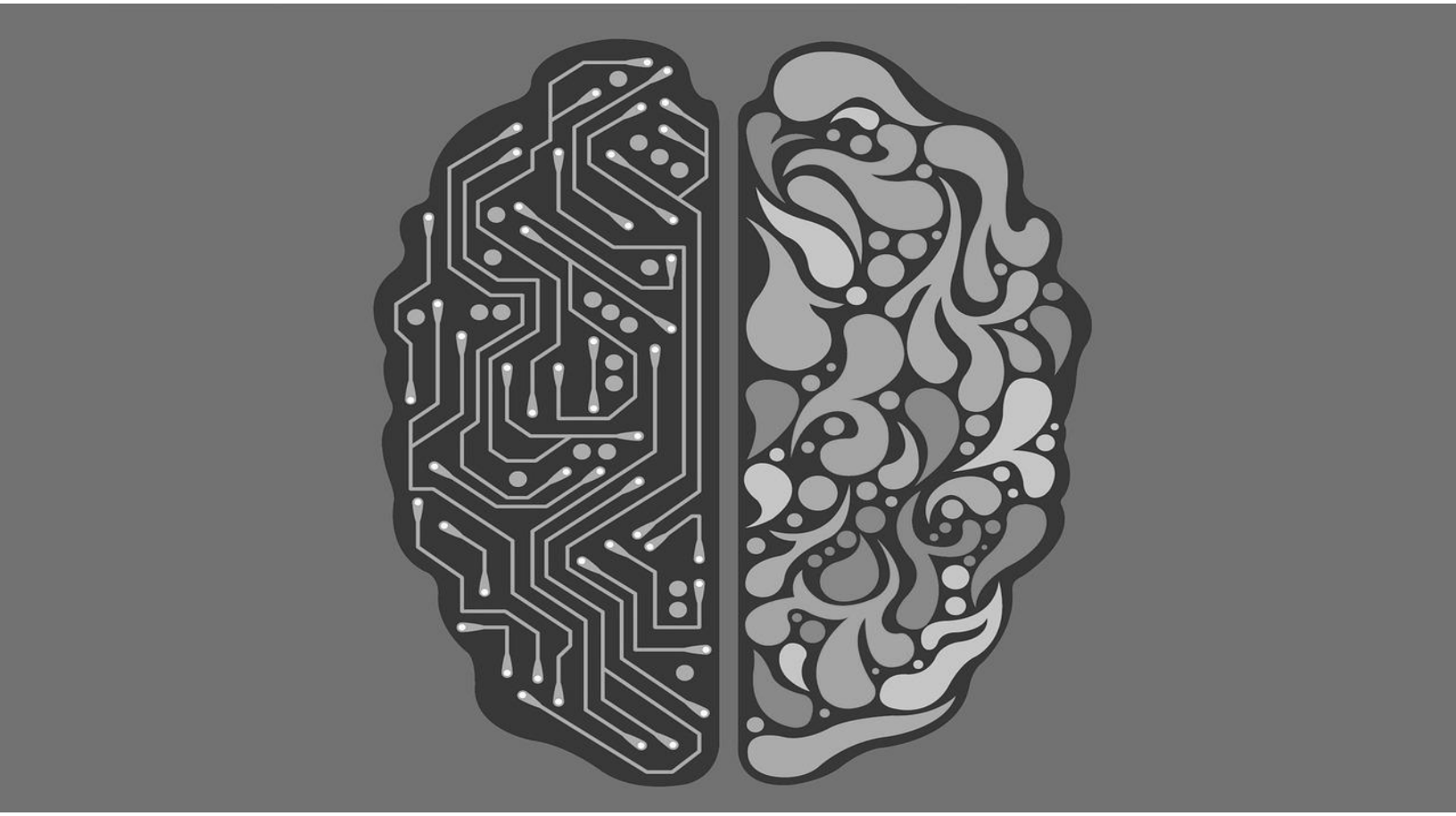

Strategies to Inform the Swiss Public on Artificial Intelligence

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Abstract

In today's society artificial intelligence technologies are becoming more present, however, the Swiss people are still generally under informed on the topic. Our project is to assist our sponsors SATW in developing new methods to educate the Swiss Public about AI, find where and how it is implemented and maintain a dialogue surrounding it. We conducted interviews, a survey and gained observations, from which we proposed videos on YouTube, active events as well as focusing the informing on current AI applications.

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Authorship

This Authorship section represents who took lead on each section and saw it to its end. All team members were involved in the editing and revision process throughout the whole paper.

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Executive Summary

Technology today is evolving at an astonishing rate. Self-driving vehicles, voice activated personal assistants and facial recognition technologies are all examples of technologies we have today that only a short time ago were present only in fiction. Coincidentally, all of these innovations heavily incorporate one common technology, artificial intelligence (Giles, 2018). Artificial intelligence (AI) has the potential to prove immensely useful in a variety of applications, and should they be applied appropriately, they have the potential to lead to very quick leaps in technological innovations (Patrizio, 2016).

With artificial intelligence's broad range of applications, its further development and use will continue to affect the general public more and more. Unfortunately, however, in Switzerland (like much of the rest of the world) it seems many on the population are either misinformed or uninformed about such technologies, which could easily lead to a detrimental fear of these technologies (Swiss Academy of Engineering Sciences, 2019). This misinformation and fear likely stems from the fact that much of what the public knows about AI comes from its often inaccurate portrayal in the media, as well as the lack of professionals on the topic in the media (Dodd, Grant, & Seruwagi, 2011). In a place like Switzerland this is especially relevant as the nation's direct democratic government allows the people to play a large role in the legislative process. So if the public is not properly informed on the true facts about AI and its many benefits as well as its risks, then regulations may be passed that stunt the nation technologically, or alternatively, the necessary regulations to prevent the potential negative uses of the technology (e.g., privacy concerns) may not be passed (Swiss Academy of Engineering Sciences, 2019).

The primary goal of our project was to recommend effective ways to inform the Swiss public about artificial intelligence. We identifies the Swiss public's current opinions and knowledge of artificial intelligence, to determine how Swiss people are currently getting their information on AI and emerging technologies. Finally, we determined how people would like to be approached and educated on AI technology. Ultimately, we identified better methods of informing the public on what they do not know about AI.

Overall, to gather the data we needed to develop the best methods of informing the public we surveyed the general public, as well as interviewed with experts in the field of artificial intelligence, and in particular with experience in conducting an information-focused dialogue with the public. In addition, we also conducted several observations of events that we attended in order to see what the current process and procedure was, and what was effective about them.

By interviewing experts in AI we were able to determine what information on AI is actually important for the people to be informed on and obtained recommendation on successful methods to inform the general public.

By surveying the general public we were able to gather the most amount of information efficiently in order to see both what people currently know about AI, as well as how they would like to be approached on the topic and how to interest them in the topic, i.e., what methods of informing they would respond to best. We also attended events on new technologies such as AI and made observations on what engages the attendees to better inform our final recommendations.

From our survey, interviews, observations and events we conducted, we were able to identify the main ways that people were currently learning about AI, as well as what their opinions were and how they would like to be approached on the topic in the future. From our

survey, respondents reported that they had, on average, a general understanding as to what AI was and where it was implemented in society. From their responses we also saw that most people were comfortable with the idea of AI and its implementation in society. Experts generally tended to agree that the general public has a limited understanding about AI, and for the most part they also recognized that there was some misunderstanding about the subject perhaps due to its misrepresentation in the media. In general, respondents stated that the main methods that they currently used to get information about AI was through the internet, with print media and TV being second and third respectively. Respondents also stated that in the future, they would like to be educated in the topic of AI through videos as well as some events and workshops, with a focus on subjects that directly impact their lives such as autonomous vehicles, personal assistants and security. Experts tended to say that the methods that they found to be most effective were those that included some element of interactivity between the audience and the speaker, such as expert panels and Question and Answer sessions. From these results, the recommendations that we propose are creating a series of videos that will be uploaded onto YouTube, a focus on implementing events that include more audience interaction to promote discussions, a combination of the two methods, having topics focused on how AI impacts the Swiss Public's everyday lives, and finally a focus on combining forces with other groups with a common goal.

1. Introduction

When people hear the words Artificial Intelligence (AI), there are many different perceptions people have. Some see it as the key to a future with technologies beyond what can even be imagined now, while others see it as hyper intelligent robots that threaten the safety of humans (Cave et al., 2018). Obviously, these are both extreme ideas; however, these are the ways AI is portrayed in popular media and film, where people are most likely to be confronted with the concept of AI technology. In reality, the most basic definition of AI is technology that can reason or act similarly to a human mind (Russell & Norvig, 2011). While the artificial intelligence technologies we have and use today are very powerful, they are far from a true conscious intelligence that can think on its own like a human mind. Many of the AI technologies we see today fall more into the category of machine learning/deep learning, which can be used as an incredibly powerful data analysis tool. Although these technologies have already had effects on many areas of our society, and its presence is only increasing, it is still unclear what the public knows about AI and how they would like to be approached on the subject and the pros and cons of its use.

Despite all efforts so far, it seems much of Switzerland is still at least partially uninformed on AI and its implementations in society (Swiss Academy of Engineering Sciences, 2019). There are a number of organizations that have attempted to explain the current state of artificial intelligence in Switzerland (e.g. The Swiss Academy of Engineering Science, Foraus, Swiss Cognitive), however, this effort is still very much a work in progress, leaving much of the public seriously uninformed on this technology. This lack of knowledge and pervasive misinformation could likely cause intimidation in the populace that would impede the Swiss

people's ability to make properly informed decisions on AI's use in Switzerland (partially due to its often extreme portrayal in the media as previously mentioned e.g. Terminator). It is essential for the citizens to understand these technologies, as Switzerland is a direct democracy, and all citizens have an important voice in the legislative process, such as legislation on the use of AI. According to a press release published by The Federal Council of Switzerland (2018) there is not currently a political framework in place to regulate AI technologies, but they recognize the need for it.

Up to now there have been a number of efforts to get an understanding of the population's knowledge of AI as well as to inform the public, though it is seemingly not enough. One such effort is a research project titled "Artificial Intelligence Through the Eyes of the Public" (Dodd, Grant, & Seruwagi, 2011). The project concluded that there is no connection between experts' work and research in AI and the public's understanding of AI, which shows there is a lack of quality information on AI available to the public, or at least it is not very accessible to the public. The paper rather found that the population mostly gathered their understanding of AI through media outlets which are not as reliable as expert work, though much more accessible. Curioni (2017) has found that AI related courses are becoming more and more common in Swiss universities, however more work needs to be done in order to reach the everyman with basic, reliable and relevant information on current AI applications found in Switzerland. The Swiss Academy of Engineering Sciences (SATW) has also now held a number of events meant to sensitize and inform the public on AI topics, however the full effectiveness of these events is yet to be realized.

What the SATW is not yet fully aware of is what the most effective methods to teach the public about artificial intelligence are. To a degree, there is also insufficient information on what

the Swiss population's current perspectives on AI currently are, as SATW itself has little published research on the Swiss population's feelings regarding AI. It is believed that much of the population has formed their opinions on AI through AI's presentation in the media (Cave et al., 2018). SATW would like to determine the best methods to inform the Swiss public, but they would also like to know more about what the Swiss public currently knows about AI.

The goal of this project was to recommend the most effective methods to better inform the Swiss public on the current state and uses of AI technologies as well as include them on the dialogue about these technologies. To do this we completed three objectives that are as follows. We identified a portion of the Zurich public's current opinions about and knowledge of AI, we identified where this portion of the public currently gets their information on AI and finally, we determined how these Swiss citizens would like to be approached on the topic of AI. We accomplished this through the implementation of a survey, 8 interviews with professionals across various fields and observations in order to collect data on people's thoughts and attitudes towards AI. Through the completion of these three objectives, we were able to identify which existing methods are most effective in informing the public on AI and including them in the dialogue about it, and some more specific information on how to implement these methods to address this specific issue.

2. Background

Artificial Intelligence is constantly growing in today's world and covers such a broad range of technologies, which makes it hard to define and understand. In this chapter we will define artificial intelligence (AI), the current applications of AI, how the public has been educated about AI, what opinions the public may already have about AI, and what ethical issues have emerged in the use or potential use of AI so far. Education strategies on how to better inform the public are also discussed. Furthermore, we will also discuss how all of these topics relate in Switzerland.

2.1 Education

Education on new technologies is something that could prove to be very beneficial for all stakeholders in new tech. In particular, companies have found that there are several important aspects to education and its use for emerging technologies (Barlow, 2011). Education on new technologies can prove imperative to the creation of new advances. This section looks at education techniques and possible applications for educating populations about artificial intelligence.

2.1.1 Teaching Methods

When considering how to educate people on Artificial Intelligence, one must regard all kinds of teaching standards, strategies and time frames. In the instance in which the students

have a year to learn, many strategies can be implemented. However, it is most likely that students will need to learn either within two hours or within four to six hours over several weeks. In these cases, the most effective method should be implemented.

It has been shown with new technologies that exposure is one of the most important aspects to the acceptance and learning about these technologies (Holzinger, 2010). In educating people about Artificial Intelligence, what can be seen as important is both the education and the exposure (Poth, 2018). Curriculum should focus on several key points, such as what artificial intelligence is, how it is used day to day, where it could go, how it helps people, and how it is created.

When considering educating people about new technologies, different demographics must be considered. Older adults tend to learn in different ways than teenagers or young adults do (Kuhn, 2006). Furthermore, younger adults have grown up with constant exposure to these kinds of new technologies. Academically, adults have more experience learning whereas younger children and teenagers are still learning how to learn. Different seminar, workshop or lecture types would likely need to be adapted to account for this (Holzinger,2010).

Sarama states (2017) that children tend to gravitate towards hands-on, kinesthetic learning, whereas adults respond best to verbal instruction. This can be reflected in the way adults tend to teach, so it is important to consider the teaching differences when working with children. Further studies indicate that active learning strategies are much more effective for younger learners (Holzinger,2010). These approaches can be applicable all the way into the late teens. In terms of adults, there are plenty of studies being completed on new tech and education. One instance of a study on helping adults learn tech was in a study conducted in Korea (Gottschling, 2004). The majority of older adults could understand and recognize that they used

AI technologies every day, but the majority felt they didn't have the technical skills to use the technology they had, such as smartphones. Researched showed that most Korean smartphone users understand that they are equipped to learn more, but weren't sure how to achieve this. There was a consensus that was a need for explicit and direct education.

In a separate study, adults were instructed to take an exam before and after education on their knowledge and use of their smartphones (Mohadisdudis, 2014). The study showed that participants scored much higher on the post exam. The training used two models. The first model was a technology acceptance module, which operates on having the user assess and understand the use of a technology as well as understanding the ease of use. For example, if an adult believes a new health technology is both easy to use and helpful for them, they will go out of their way to understand this new technology. The second biggest theory used was the innovation theory. This theory focuses on teaching the reliability and sustainability of a new technology. If adults believe this technology will be reliable, they are more inclined to use it. Moreover, if they believe it is not a commodity that can run out, they will be more ready to use it.

These models could be instrumental in the creation of education seminars. Organizations such as SATW could focus on these theories to help adult learners begin to grasp the newest of AI technologies ensuring that the adults know different applications of AI can show both ease of use and sustainability. Allowing adults to use hands on AI technologies can highlight reliability and how helpful those techs can be.

2.2 What is Artificial Intelligence?

The field of Artificial Intelligence covers a very large range of topics and applications, and it would be difficult to encompass its entire definition in a concise form in one sentence. Its definition differs based on the context as well as the readers' and authors' opinions. One way it

can be defined is: a technology that has been programmed and/or designed in order to replicate the function and reasoning of the human mind. However, from other points of view artificial intelligence can be seen as a field devoted to building artificial animals and, for many, artificial persons (Bringsjord & Govindarajulu, 2018). One of the common approaches to defining true AI is the Turing Test approach, which is dependent on a number of capabilities; natural language processing, knowledge representation, automated reasoning and machine learning (Russell & Norvig, 2011). Natural language processing is the ability for the machine to communicate successfully in various languages, knowledge representation is the ability to store what it knows or hears, automated reasoning allows the machine to utilize this stored information to come to a new conclusion and machine learning is the ability to acclimate to new circumstances and detect patterns within data. All of these aspects of a true Turing-tested AI are and will be essential to many of the current and future applications of AI. However, the most important of the near term applications that will affect the public most directly, are natural language processing and automated reasoning characteristics.

2.2.1 Current AI Applications

In terms of much of the current AI technologies, the most important feature is machine learning, or more specifically "deep learning" (Giles, 2018). Deep learning is a specialist term given to the practice of feeding programs with artificially intelligent tendencies vast amounts of data and allowing it to attempt to recognize patterns; these patterns can then be applied to analyze new data. Some examples of technology available today that utilizes these deep learning techniques include image recognition, voice translation and self-driving car technologies.

There are also the various personal assistant technologies the public has become accustomed to, whether it be Apple's Siri, Amazon's Alexa or Google Assistant. All of these utilize very rudimentary artificially intelligent software (Sinicki, 2019). These technologies, as well as the previously mentioned translation technology, have much more to do with the natural language processing portion of AI, however, some of these assistants, such as the Google Assistant, are progressively getting more complex and starting to incorporate some of the other aspects of a Turing-tested AI. Knowledge representation and automated reasoning integration have allowed a user to have more of a conversation with the Google Assistant, referencing past requests that the assistant will remember, whereas the other assistants can only handle one unique and original request at a time.

In order to give full context of the capabilities of current AI technology, one can look at the previously mentioned image recognition example. One prominent case of this technology's use can be seen through Facebook and Google Photos (Maruti Techlabs, 2019). Image recognition is, as one may imagine, the ability for a machine to identify a person, place or object just from one image. The process begins when a user on either of these services posts a picture of another person and tags them in the image with their name or their Facebook account. This process continues, and through machine learning software Facebook/Google is able to look at all of the tagged photos of a certain person and analyze the geometric attributes of the subject's face using these deep learning algorithms and use this data to recognize future posted photos of this person, without the user needing to input any other information but the new image. It has been found that through the continued use of this technology, Facebook can recognize a person's face with 98% accuracy, and Google Photos can search your library and with extreme accuracy to

make albums containing only images of the one individual. This technology is clearly extremely impressive and speaks a lot to what may be to come in terms of future AI applications.

2.2.2 Future AI Applications

It is impossible to tell exactly what is going to happen in the future as AI technology continues to advance; however, at the current pace of development it has the potential to prove extremely useful though also potentially deleterious, as discussed later. Therefore, it only makes sense to at least look at which directions these technologies may go. In the near future AI technologies have the potential to be utilized in a large variety of fields and circumstances, whether it be medical diagnoses, identifying criminals via CCTV footage or entirely autonomous vehicles (Giles, 2018). No one knows exactly where AI technology will go; all of these predictions could happen, or none of them. However, it does seem to some extent that they will happen, and even now are being used, which is why it is so important to include and inform the public about these advancements, as they could have a great impact on the lives of the everyday citizen.

2.2.3 Involving the People

There is so much speculation and hope for the future of AI and how much it may improve the world that too often it seems the most important part of the equation is ignored entirely, i.e., how the general populace feels about these technologies.

Artificial intelligence in the modern world is a very controversial topic, and an important topic to look at when considering its implementation. There is concern among experts in the field that despite its potential benefits, allowing AI to develop unrestricted in its applications could pose a direct threat to humans (Baum, 2017). Since its implementation, there is no arguing that

AI has had an impact in all fields of modern life, and has helped to improve both the efficiency and effectiveness of approaches to solving real life problems that have the potential to improve people's lives. Despite this, there is a real concern that AI technologies could develop beyond the scope that humans designed them for or are comfortable with, which brings up the question of whether or not the risk is worth the reward (Kose & Vasant, 2017). The feelings that are held by the general public are hard to pinpoint, but they are an important thing to take into account during the development of possible new technologies. A major concern at this stage of AI development is that it has the potential to become ultra-smart and do things that it was not necessarily designed to do due to the nature of what it is. Its purpose is to independently complete tasks without the need for human assistance or interference, leading to the potential for it to do things that were not intended (Ema et al., 2016). Naturally this could prove to be worrying to many citizens, however, the world is not close to having advanced enough technologies at this point for something like this to realistically happen, and given a future where we have this technology, it will hopefully be a mere matter of increased regulation to prevent any misbehaving AI.

2.2.4 Pros and Cons of Artificial Intelligence Use

Artificial intelligence is neither inherently good nor bad; it depends entirely on its use and application, and thus it is important to look at both the pros and cons surrounding the implementation of AI technologies in today's world. AI has the potential to help make the world a more efficient and productive place, without the need for humans to do boring or mundane work (Dasoriya, Rajpopat, Jamar, & Maurya, 2018). However, this could also have the consequence of an increase in the level of unemployment, which is a challenge to combat in societies with inflating economies. There is no doubt that at its current stage, AI has the potential

to play a positive role in society, which cannot be ignored. It is important, however, to look at both sides of this coin and pay attention to not only the good aspects that AI has to offer but also the negative parts as well. Part of this is looking at the reliability that artificial intelligence has to offer, and the effects that any mistakes could have in the fields in which it is implemented. The mistake doesn't always have to have major, catastrophic effects, but it is still important to look at the mistakes of the past before moving forward. An example of this is an event in Sydney, Australia, from 2014 in which the algorithm that was used to determine the prices for a popular ride sharing app skyrocketed prices in the immediate aftermath of a shooting and hostage situation, making it unnecessarily difficult for people in the area to evacuate (Patrizio, 2016). Although events like these may not have catastrophic consequences, it is still important to look at them due to the social impacts that they may have and the negative attitudes that they may form in people (Dasoriya, Rajpopat, Jamar & Maurya, 2018). Unlike in humans, a machine would not be able to take into account the emotions or other considerations that a person would have when making a decision. In surgery, for example, a human doctor is able to look at ethical considerations and use his/her own emotions and common sense when making decisions, which is something that a machine using AI would not be able to do, leading to perhaps a mistake that could have been prevented.

The use of artificial intelligence is not all bad, and some of the positives that it has to offer cannot be ignored. One of the main arguments in favor of AI is the potential for it to do dangerous or tedious work for humans at much faster rates, eliminating the need to risk human lives (Patrizio, 2016). The benefits that this could potentially have cannot be denied, and it would allow humans to focus on other, arguably more important things without the need to take as much risk. An example of this would be in applications such as space or deep-sea travel, in

which the use of a human to operate any of the equipment could prove to be both dangerous and impractical. An AI implementation in this scenario would be both more cost effective and more practical. AI has overall made a great impact in today's world spanning from applications in medicine, like cardiovascular imaging (Dilsizian & Siegel, 2013), to business through machine learning and algorithms (Mukherjee, 2018).

2.2.5 Ethics of Artificial Intelligence

When addressing how to inform and maintain a dialogue with the public on AI, one of the central points of conversation should be the ethics behind any of AI's implementations. There is the overall concern of the development of a general AI that can "reason across a wide range of domains" (Baum, 2017, p. 2). The development of an AI such as this raises the age old question "even if we can do it, should we?" as the development of such a machine has the potential to either leap us miles head technologically and have huge positive impacts on the world, or, there is also the potential for a thinking machine to have catastrophic effects on the world if left unchecked. This is why it is so important to discuss ethics when considering the further development of these technologies.

Ethical concerns obviously need to be addressed within all implementations of AI; however, one of the largest areas in which it will need to be addressed is in the field of personal information/data (The Information Accountability Foundation, 2018). One great example of this can be seen through work done by the Hong Kong Information Accountability Foundation (2018) that worked in tandem with the Privacy Commissioner for Personal Data in Hong Kong to produce a report titled "Ethical Accountability Framework for Hong Kong China." The most important part of this report is how it addresses the ethical implications of these technologies,

especially when it comes to their applications in the analysis of collected personal data of individuals. The report stated that AI technologies could be fed a large amount of information found online, and then the technology would have the ability to make huge, even if accurate assumptions about a person's life. This was considered by the authors to be ethically wrong, and the report concluded that there would need to be restrictions put upon this type of technology.

A part of the goal of SATW (2019) is to maintain a dialogue with the public on these new technologies. This includes an ethical analysis of their use. Although SATW and the organizations involved in the Hong Kong report are doing very similar work, they are in no way competing with one another, and although they are also not officially working with one another, they are all doing work that supports achieving the same goal of keeping the public informed and involved with the ethical use of new technologies.

2.3 AI in Switzerland

SATW is interested in the opinions, education and dialogue about AI among the Swiss people. In this section we will focus on what is already known about the current opinions of the Swiss people about AI as well as past work that has been completed in order to educate the Swiss people on up-and-coming AI technology.

2.3.1 Current Opinions

According to the SATW (2019), it is assumed and believed that the Swiss public, and specifically people living in Zurich, may still be overtaken by feelings of intimidation, because of ignorance and lack of education on the topic. However, as Switzerland is home to some of the best Tech schools and colleges in the world, there are a plethora of courses that students and the public in general can take (Dessimoz & Stadelmann, 2015). Some of these universities include

the Universities of Basel and Zurich and ETH Zurich, which focuses strongly on machine learning. Specifically, in 2015 the Swiss Group on Artificial Intelligence and Cognitive Science (SGAICO) conducted a survey on AI education in Switzerland, which showed an increase of AI-related courses at Swiss universities. This is significant for the education of the public, which in time could also prove beneficial to eliminating the intimidation feeling of the Swiss public around the topic of AI.

2.3.2 Past Research

SATW has completed a number of projects with member organizations that involve a plethora of different topics regarding AI (Curioni, 2017). One of the most similar projects done by the organization is "AI and structured data", which involves examining which Swiss branches of AI are used enough and how to create competitive advantages with them. The organization hosted a workshop to discuss the current state of science as well as a tutorial for people from the AI industry who are interested in the topic.

Some other research completed in Switzerland on the topic of AI took place in the fall of 2012 when the Swiss Informatics Society (SIS) put SGAICO under direct guidance of the SIS president to prevent the closure of this special interest group (Dessimoz, Koehler, & Stadelmann, 2015). A diverse team of researchers was asked to help revive the group, and a small amount of money was granted to restart it. The organizing team included researchers from the University of Basel, EPFL Lausanne, and three universities of applied sciences in Zurich, Lucerne, and Western Switzerland (HES-SO), who brought in numerous academic and industrial contacts. The team has launched several successful events and continues to bring energy to the AI and cognitive science community. Furthermore, the Swiss IDSIA lab is a pioneer and major proponent of deep learning, a topic discussed earlier. ETH Zurich has appointed several chairs

working on machine learning and, for example, organizes the Zurich Machine Learning and Data Science Meetup, which easily attracts around 100 attendees for an evening of three technical lectures. In general, despite a population that may be skeptical of the necessity and effectiveness of AI, there is also a number of people in Switzerland who have shown a very strong interest in machine learning, especially recently. One reason why this might be the case is because of the trend toward big data that has been widely recognized among industry and academic representatives alike. Much interdisciplinary work is done under the headline of data science. For example, the Datalab at the Zurich University of Applied Sciences is one of the first interdisciplinary groups in Europe devoted to the creation of data products for and with the industry. Another subfield that has attracted both theoretical and practical research is multiagent systems. At ETH Zurich, the large Institute of Robotics and Intelligent Systems has many activities, a highlight of which is the flying robots developed in the group of Raffaello D'Andrea. At the Swiss Federal Institute of Technology, Lausanne, Switzerland (EPFL), there is robotics research across several groups. Originally mostly addressing the industrial sector, the teams of Christoph Burckhardt and Frédéric de Coulon made contributions to some specific types of AI, such as microtechnologies and signal processing, respectively.

2.3.3 SATW Educational Efforts to Date

SATW has been working on educating and informing the Swiss public about AI by testing out various gatherings, from events to expert workshops available to the public (M. Kugler, personal communication, April 5, 2019). Some of these methods have indeed been successful in the past and are still currently being used. A problem that has arisen, however, is that the majority of the people who have attended these events are people who were already interested in the topic. The goal overall is to get more people involved in the discussion of AI, so

that they are capable of making important decisions for their societies and communities on the topic. As of right now, there is an ongoing project at SATW that could indicate how many people truly attend such events, and which events attract the most people and why. This information could help immensely when trying to find the most effective methods to better educate the public, as it will indicate which specific topics the Swiss population lack education on or are most ignorant about. In the next chapter we will explain how we will carry out research to find answers to some of the still unanswered questions.

3. Methodology

The goal of this project was to identify methods that the Swiss Academy of Engineering Science (SATW) can use to promote awareness, information and understanding about artificial intelligence and its uses in Switzerland. This was achieved by:

1. Determining the current understanding and opinions about artificial intelligence among the Swiss public.
2. Determining the methods that people are currently using to obtain their information on AI.
3. Determining the methods that the Swiss Public would prefer to use to get information about it AI.

This chapter describes the methods we used to gather information to achieve these objectives.

3.1 Determine the Current Understanding and Opinions about AI

In order to establish possible methods to help educate the public about AI, we first looked at the current level of understanding among the Swiss public. This information served as the basis for how we identified appropriate informational programs for educating the public. By surveying members of the general public and university students we got a sense of what they knew and what their opinions were, and were provided with valuable insight as to what more needed to be done. In addition to this, one objective of the project was to identify the understanding that the Swiss people currently had about AI, and to make any suggestions towards possible misunderstandings.

3.1.1 Survey to Determine Knowledge and Attitude

To begin our survey efforts, we chose to administer it to a sample group of 11 respondents to determine if we were gathering data useful to inform our recommendation to the SATW. These questions were mainly focused on the opinions of people, as well as having a focus on the various methods that they currently used to get their information and how they would like to be informed going forward. From this initial test run we were able to make a few minor edits to our survey to ensure it was most effective at gathering the information we wanted before we went on to survey a much larger group of respondents.

The survey was used to collect data that was then analyzed to determine where any gaps in knowledge existed so new methods could be established to help fill them. The survey was carried out by using a standard questionnaire (see Appendix B). The target populations included students from the ETH University Campuses in Zurich as well as Swiss citizens found in public. Students within Switzerland represent a large and influential portion of the population, and due to this they were an important demographic to keep in mind when collecting our data and establishing solutions. Also, due to the ease of reaching this population of people, a large focus for our surveying was centered around students. The edited survey included new questions to better accommodate school levels in switzerland. It also included new questions about what AI they'd like to learn about.

The survey was conducted by approaching students on their campus, or people within a public square, and asking them if they would like to participate. Respondents were then given the option of completing the survey either on a provided tablet, or on their own device by scanning a QR code. Their answers were then automatically recorded through Google Forms, which allowed for later analysis. The people surveyed were selected based on convenience sampling, and our

target was to survey as many people as we could in the time that we had. Overall, we ended up surveying 112 people. Of these 112 respondents 81 were ages 15-25, 22 were aged 26-40 and 8 were above 40.

3.2 Identify the Current Methods Used to Educate the Public about AI

In order to develop new, effective methods to propose to SATW to help educate the Swiss public about AI, it was important that we first looked at the things that had and had not worked in the past. To do this we used interviews with experts related to the field of AI and technology in general, as well as some experts in fields such as psychology and communication. The latter types of experts gave us insight about the ethical implications of AI that were relevant to our project, as well as information about how to more effectively achieve our goal of helping to educate people on the subject.

3.2.1 Interviews with Experts

In order to establish what has already been done regarding educating the public about AI, we conducted a series of interviews with experts within technical fields, as well as an expert in the field of psychology and communication arranged with help from members of SATW. These interviews were conducted with a strict guideline for the questions that were asked and the procedures that were followed. This helped to ensure that the qualitative data that we collected in these interviews was as reliable as possible. This information gave us a sense of what progress had already been made, as well as the areas we needed to improve on when we were developing any new method of educating and informing the Swiss public. The interviews were recorded so that they could be referenced at a later date if needed, and in addition notes were kept throughout the interviewing process. The questions for the interviews were provided to the experts several

days in advance to ensure the responses could be as detailed and informative as possible. The interview protocol described in Appendix D was followed for each of the interviews that were conducted, with a series of general questions to begin each interview, followed by the prompting questions section, which varied from interview to interview based on our research into each expert's personal experience (The prompting questions section in Appendix D is an example of these more specific questions, not what has been actually used as they vary.) The 8 interviews with experts were scheduled prior to our arrival by members of SATW.

3.3 Identifying How People Want to Be Informed

Not only was it essential to obtain an understanding of what the Swiss people knew about AI and how they felt about it, it was most important to determine how the Swiss public would like to be informed about AI related topics and what methods they would respond best to and what methods would be most effective to achieve the goals of this project.

3.3.1 Surveying

The first way we determined the ways the Swiss public would like to be approached on AI topics was through a survey of the public. We used this method as it allowed us to reach a large number of people and gather a large amount of data in a relatively short time compared to other methods. We included some questions on how people would like to be informed about AI as part of the survey. Again, this survey questionnaire and protocol are located in Appendix C, and were available in both English and German versions. In addition, the same populations were targeted as the ones described in section 3.1.1. and for the same reasons. The same protocol and survey questions were used as the ones described in that section as well.

3.4 Observations

As part of collecting data about what methods were effective in informing the public about subjects, particularly those related to technology and AI, we attended the Digital Switzerland Conference that took place on September 2nd 2019 in the city of Basel. Here, we were able to observe several talks and discussions about various technologies, and get a first-hand experience about what methods we felt were the most effective. This included observing which of the talks had the largest attendance, as well as seeing which talks garnered the most interest and interaction from the crowd. The talks that we observed from this conference included a series of lectures given by different people in different styles, as well as a series of group panels and discussions. The event was invite only, and the majority of the audience was made up of either business people, or people who were interested in the topics being discussed. From our observations we were able to identify the things that we would like to focus on going forward when creating our own ideas for possible methods to inform the public on AI. In addition to this, we also attended and researched other events for the same purpose.

3.5 Summary

As part of the work that we did to help achieve our end goals, we used a survey, several expert interviews, and observations and attendance at a conference related to our project. The next chapter will detail the results that we obtained from using our various methods, as well as a detailed analysis of our data to aid us in forming our conclusions and recommendations.

4. Results and Analysis

Our overall goal for this project was to find better methods to inform the Swiss public on AI as well as include them in the dialogue on AI. In this chapter the data we gathered is presented and analyzed in order to achieve our three objectives we completed to accomplish our overall goal. The three objectives were to get a basic understanding of the Swiss public's knowledge and opinion of AI's use in society, getting a better idea of where the Swiss public is getting their information on emerging technologies such as AI and finally to find out how the Swiss public itself would like to be approached with information on AI. All visuals within this chapter are syntheses of the 112 survey responses gathered from the general public as well as students at the ETH Zurich campus, unless otherwise noted.

4.1 Objective I: The Surveyed Population's Knowledge

In this section we discuss what we found the Swiss public's current knowledge and opinions of AI's use in society to be in order to achieve our first objective.

First, we will examine the Swiss public's current understanding of AI. In Figure 4.1 we can see that 66.7% of respondents answered saying that they in fact do encounter AI technologies on a day to day basis. This is good news as in reality it is likely that nearly 100% of respondents actually encounter some form of AI on a daily basis due to its ubiquitous presence in our lives. However, it is important to keep in mind that a large portion of our surveyed population was comprised of ETH students, which of course would sway the data.

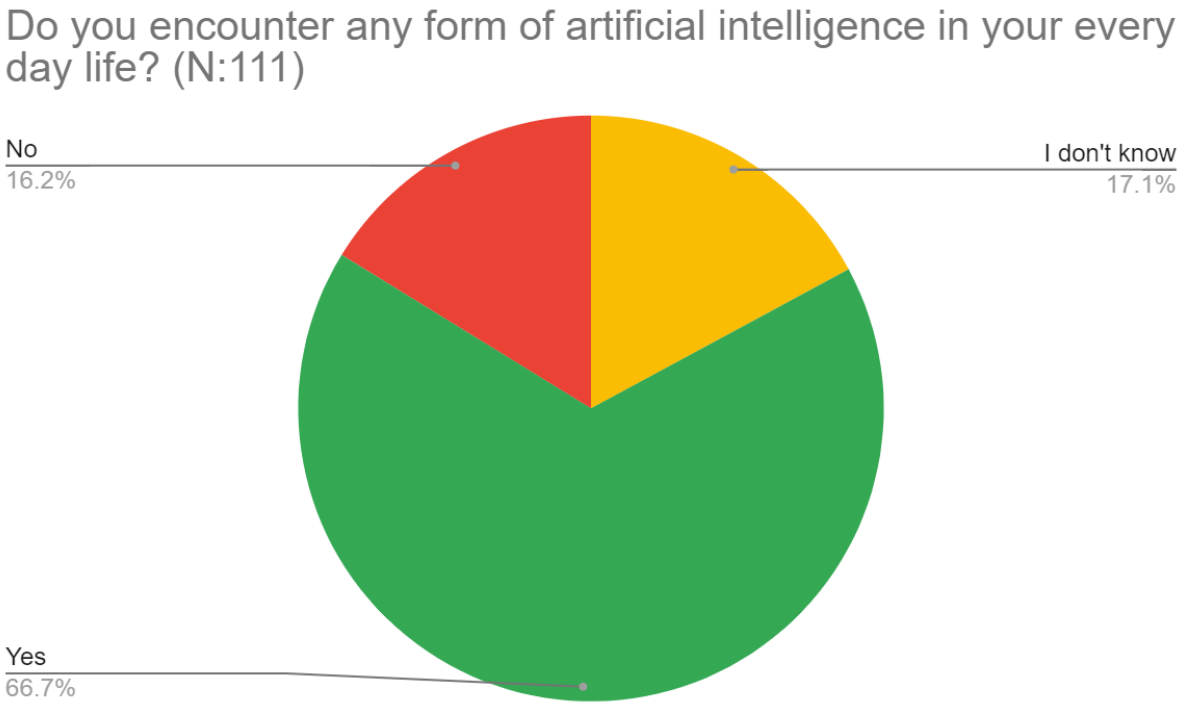

Figure 4.1: Percentage of respondents who believe they encounter AI in their everyday lives (N:111)

In addition to asking respondents if they encounter any AI in their daily lives, we also asked them to rank the level of knowledge they believe they have on AI technologies. In Figure 4.2 it can be seen that the majority of the respondents placed their level of knowledge within the mid third of the 1-10 range, with an average response of a knowledge level of 5.4/10.

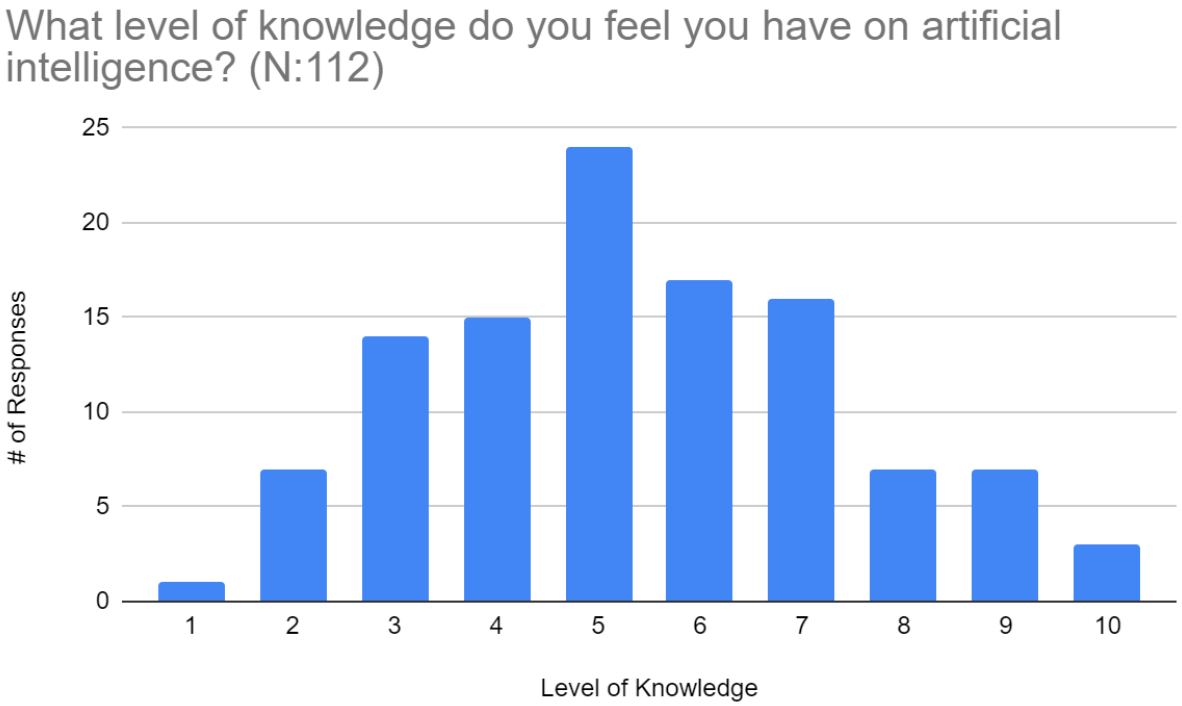

Figure 4.2: What respondents believed their level of knowledge on AI to be (1 meaning they know nothing about AI and 10 meaning they are an expert on the topic) (N:112)

We also asked if the respondents could name any examples of AI they see in their day-to-day life. While we received a fair number of expected answers (e.g. Siri, voice assistants) many answers were more involved and technical, showing a deeper understanding of AI and its common applications. Some of these examples include targeted online advertising, Google search recommendations and AI algorithms. A word cloud was created to display the most common answers and their frequency, which can be seen in Figure 4.3, the larger the word, the

more times the word was referenced by respondents.

Figure 4.3: Examples of AI seen in daily life, according to frequency of responses (N:64)

Given that only 33.3% of respondents in Figure 4.1 didn't understand that they are surrounded by AI applications in their everyday life, and the average rating of people's knowledge on AI is 5.4, overall it seems the portion of the Zurich public we surveyed had at least a basic understanding of what AI was and what some of its applications were. Although there are some differences in this data when we observe different demographic's answers, which we will examine in a later section of this chapter.

Even though our survey data shows our respondents have this level of understanding of AI, it was the general consensus of the eight experts we interviewed that much of the Swiss public still needs to be better informed on AI. At the very least many experts agreed that the people need more reliable information on AI, as much of the population would likely get most of their AI knowledge from the media/news sources, where AI is often overhyped and sensationalized. Some of our survey data also supports this idea that rather than always being

uninformed, some people are misinformed about AI (likely through media and sensationalization).

Next, we decided to take a look at the data from our demographic questions and compare that to some of the other answers our respondents gave. This data supports the idea that some people are misinformed on AI or have false confidence in their knowledge on AI. We happen to have a lot of data gathered from the age 15-25 population due to their greater willingness to participate in our survey, as well as their availability on the ETH Zurich Zentrum campus, so we took a look at this age range's responses to the questions displayed in Figure 4.1 and Figure 4.2, and compared this to the answers given by the age 26+ group of respondents. Figure 4.4 compares the answers to the question of whether the respondent encounters AI in their everyday life between these two age ranges.

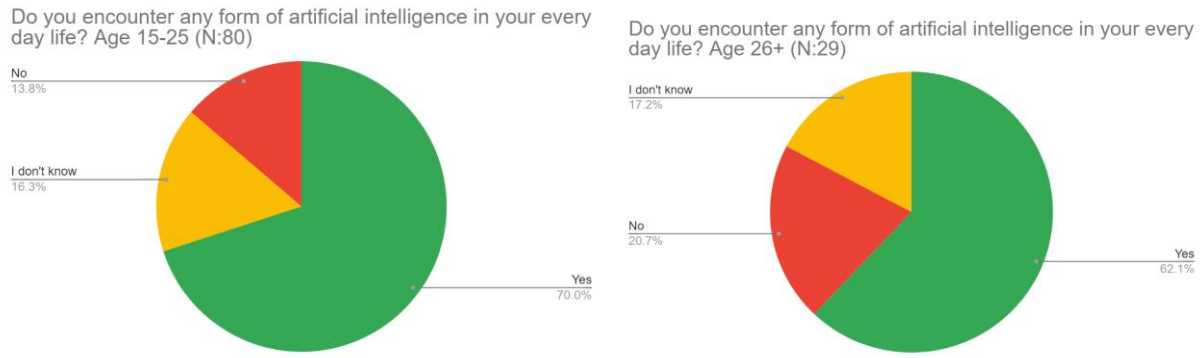

Figure 4.4: Demographic differences for what percentages of respondents believe they encounter AI on an everyday basis (N:80, N:29)

Interestingly, 7.9% fewer respondents from the older demographic answered "Yes" to this question, which shows that they have less knowledge of AI and that AI surrounds them. Another point is that much more of the older demographic's non-yes answers were "No", rather than "I do not know", displaying more of a potential false confidence in the older population's

knowledge of AI. Further supporting this is Figure 4.5, which compares the different demographics' answers to the question posed in Figure 4.2. It can be seen through Figure 4.5 that the average response by the age 26+ group was 5.85, which is greater than the age 15-25 group's average of 5.5. This, in addition to the older groups increased percentage of "No" answers in Figure 4.4 show that the older age groups are less well informed on AI, while at the same time being more confident in their knowledge of AI. This meaning the older age group could possibly be more misinformed on AI, rather than just being uninformed on AI.

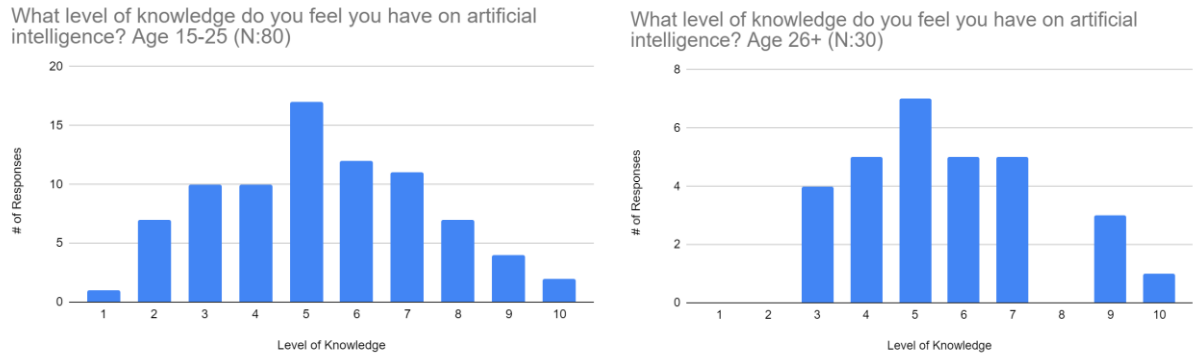

Figure 4.5: Demographic differences for perceived personal knowledge levels of AI (1 meaning they know nothing about AI and 10 meaning they are an expert on the topic) (N:80, N:29)

From this information we can conclude that while our data supports the idea that much of the Zurich respondents have at least a basic to fair understanding of AI and the applications they are currently surrounded by, there is definitely still work to be done and the people need to be more informed based on our interviewees' opinions. We did, however, learn that older populations will likely need greater attention and they will need to be catered to more as they have shown to be less properly informed on AI topics. Due to the level of knowledge we have found the public to have, we will recommend (at first at least) to explain AI more simply and less

technically, as well as to initially focus on getting the public to understand where AI is currently in their lives, rather than focusing on new and future developments.

4.1.1 Objective I: The Respondent's Opinions

In addition to understanding the level of knowledge of the Swiss public on AI, we gathered some data on the public's personal feelings towards these sometimes controversial technologies in order to gauge how sensitively the people should be approached on the topic. The first method used to collect this data was our survey. We asked our respondents to rate their comfort with AI on a scale of 1 to 10, 1 meaning they were extremely fearful of AI's implementation and 10 meaning they are completely comfortable with AI's implementation into society. Figure 4.6 shows the responses we gathered. With an average response of 6 it seems the respondents were likely still tentative on the technology, but open to it. This rather noncommittal opinion is echoed by the responses we got to the question "Do you feel AI's use will benefit or harm society?" to which 65.1% of respondents responded with "Both" as seen in Figure 4.7, which is a fairly safe assumption to make.

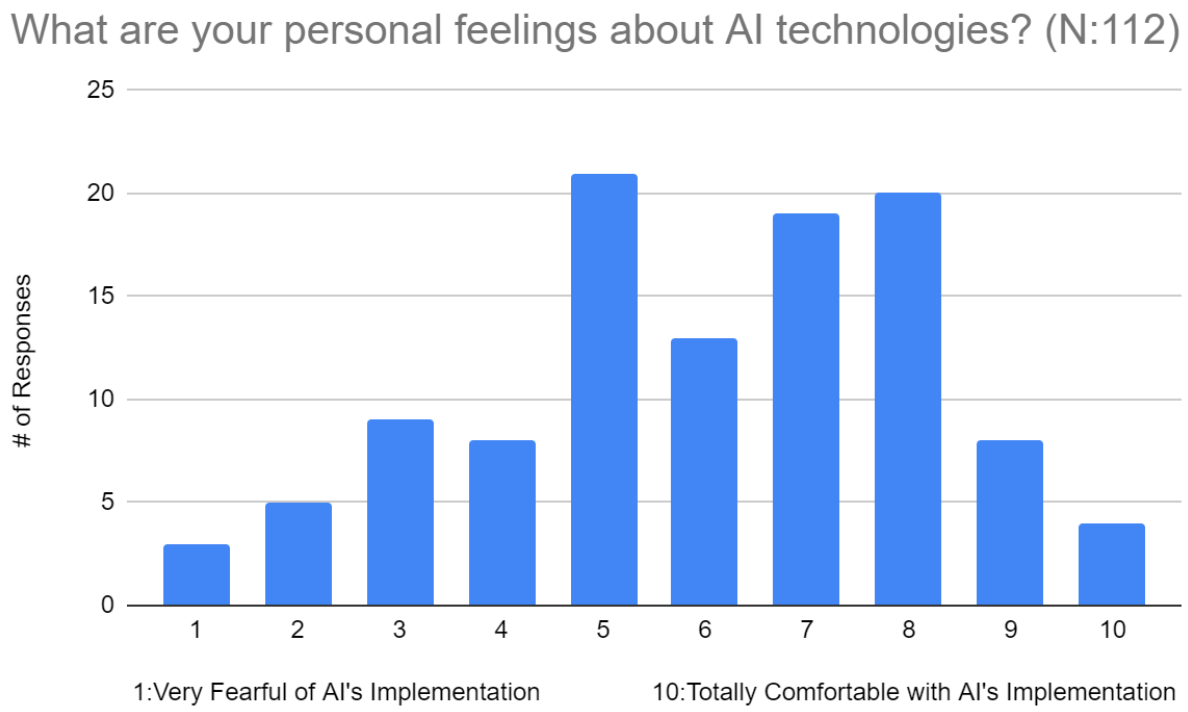

Figure 4.6: Respondents comfort levels with AI (N:112)

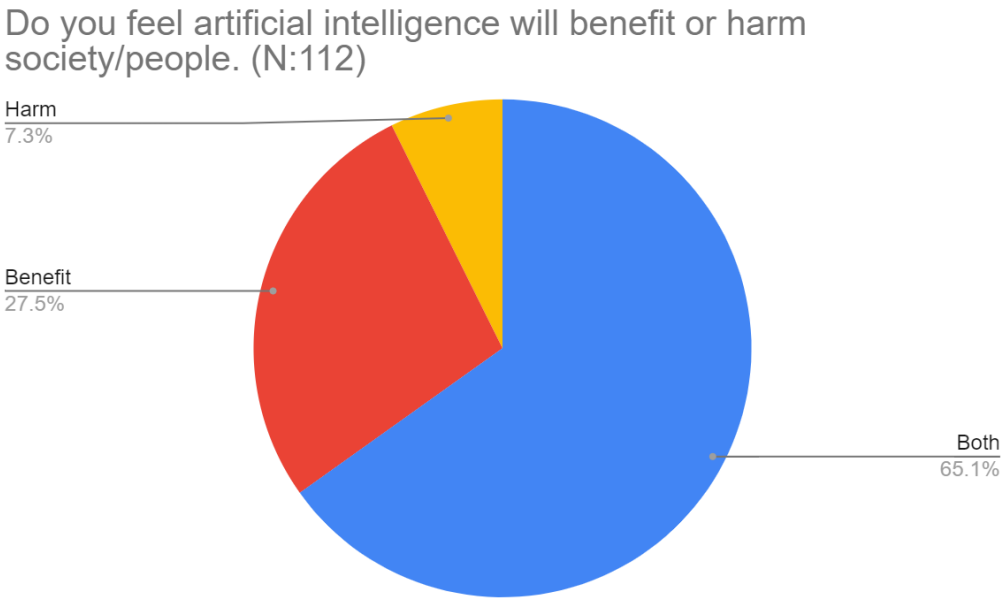

Figure 4.7: Percentage of respondents who believe AI will benefit or harm society (N:112)

Our final method of gathering data on the Swiss public's opinion of AI is more passive, though still quite effective, observation. When we approached the public to administer our survey we had a variety of reactions from our respondents. While most people were rather polite, we did have one respondent who was outspoken in his negative opinion of AI and a few others who did not seem thrilled about the topic of our survey. Though this is not wholly significant, it does show that there are people who have strong reactions when they hear about AI, and sometimes those reactions are negative, showing how a level of sensitivity, and a careful choice of words (using "cognitive technologies" rather than AI) may make an approach to reaching more people on AI more effective.

4.2 Objective II: Currently Implemented Methods

In this section we will review the methods that are currently being implemented to teach the Swiss Public about AI. In addition to this, we will go over the various ways our interview respondents are currently getting their information about AI.

Figure 4.8 shows the responses that we gathered indicate that a significant portion of people, 37.9%, are getting their information from the internet in some way. This chart also shows the other sources from which people get the most information about the topics of AI and technology. Other current sources to note are television and various forms of print, at 20.7% and 27.9% respectively.

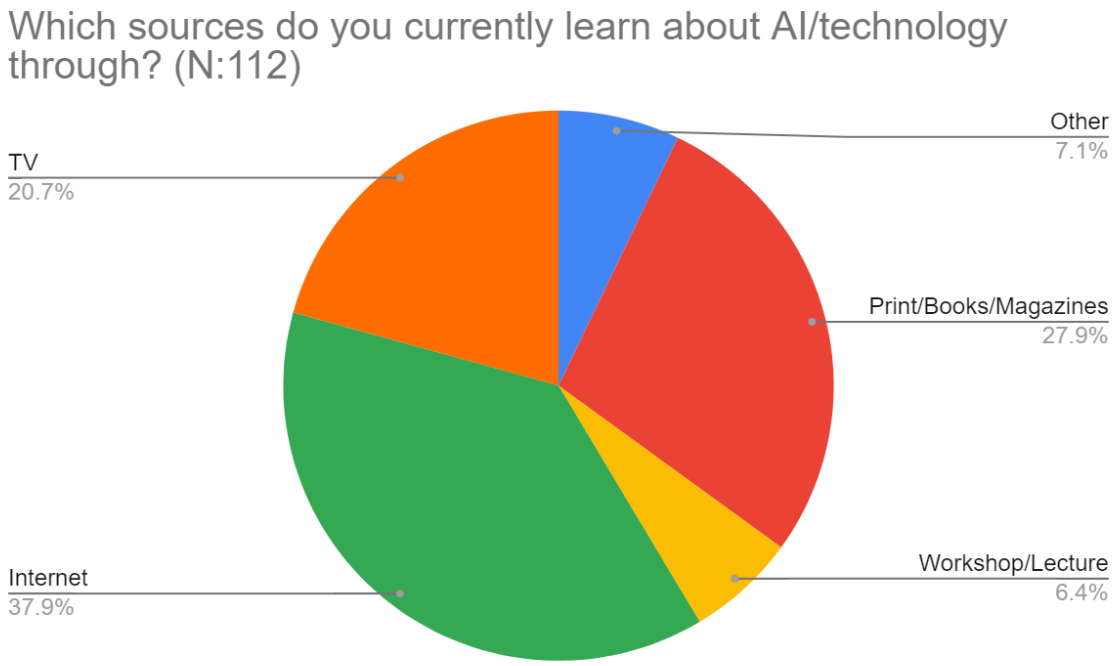

Figure 4.8: Percentage of respondents that learn about technology through specific sources (N:112)

Among the different methods that people are currently getting their information about AI and technology through, none seem to substantially correlate to a certain age of respondent. The only exception to this being print media. In this instance, the percentage of the older group who responded that print media was one of their primary methods of learning about AI was almost

10% greater than that of the younger population.

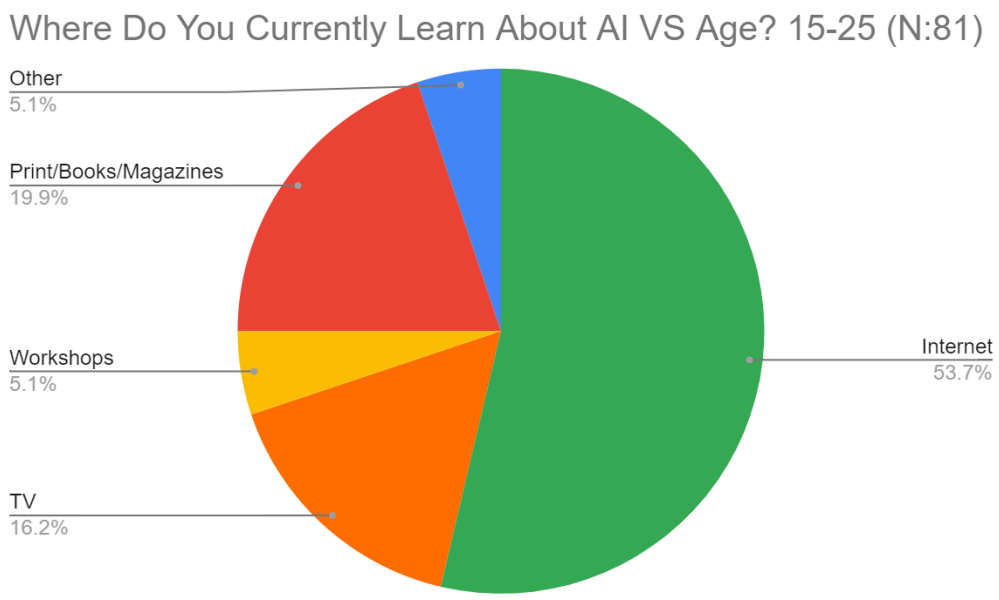

Figure 4.9: Percentage of age 15-25 respondents that learn about technology through specific sources (N:81)

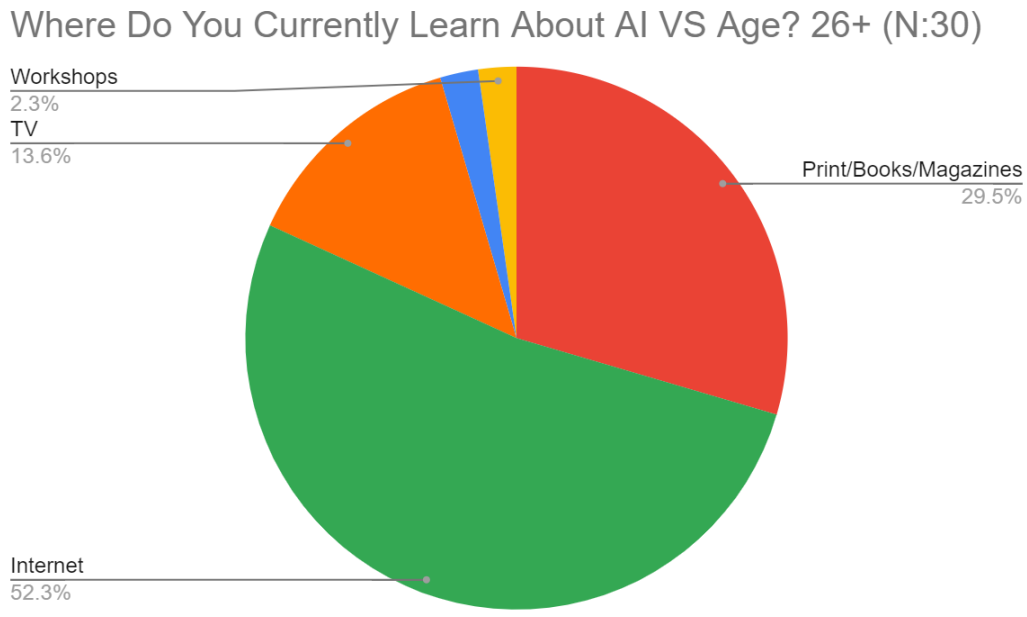

Figure 4.10: Percentage of age 26+ respondents that learn about technology through specific sources (N:30)

We asked each of our interviewees what they thought the Swiss people's perception and thoughts on AI are and as previously mentioned, almost unanimously the responses revolved around the idea that the people are still under informed or misinformed on AI. An extremely common theme found in our discussions on this question is the overhype and inaccurate representation of AI in the media. This is likely one of the key reasons why we have found people to be tentative on the prospect of further AI implementation. Another set of questions from our survey as shown in Figure 4.11 also support this point as 83.6% of respondents have seen movies or other media about AI, and 67% had admitted that AI's coverage in the media has influenced how they feel about such technologies.

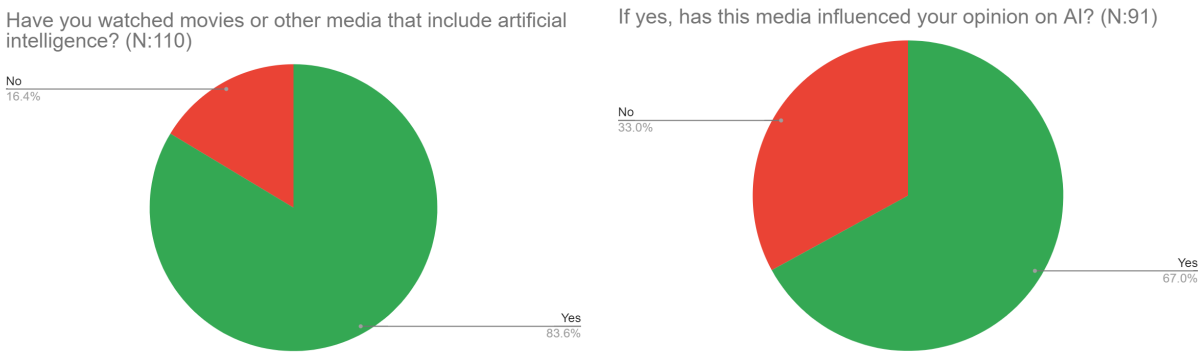

Figure 4.11: Percentage of respondents who have seen media including AI and whether it influenced their opinion of AI (N:110, N:91)

The experts tended to talk about a set of common methods used to educate people on new technologies that they found effective. These centered around different forms of lectures as well as workshops aimed at talking about various forms of technology in order to teach people about them. Another approach being tried according to experts has been a series of expert panels as well as Q and A sessions, which they said were effective. In addition to this, experts tended to

emphasize the point that the current methods being implemented were effective, and the main focus going forward should be on consolidating and improving upon them. Most of the experts also addressed an issue where many of the current events being held are typically targeted towards people who are either professionals or people who are already interested and educated on the topic of AI. None of the experts had drastically different ideas about the educational methods that were currently being implemented, and seemed to agree that in their opinions of the things being done currently were both beneficial and effective in educating the public about new technologies.

4.3 Objective III: How The Public Would Like to Be Approached

In this section we will analyze the data we collected through our various methods, that are relevant to determining what approaches the public would be most receptive to in terms of informing them on AI technologies and including them in the dialogue on AI.

Through our survey of the Zurich public we asked which methods they thought they would be most receptive to gaining information about AI technologies through. In Figure 4.12 we can see the answers we received from our 112 respondents.

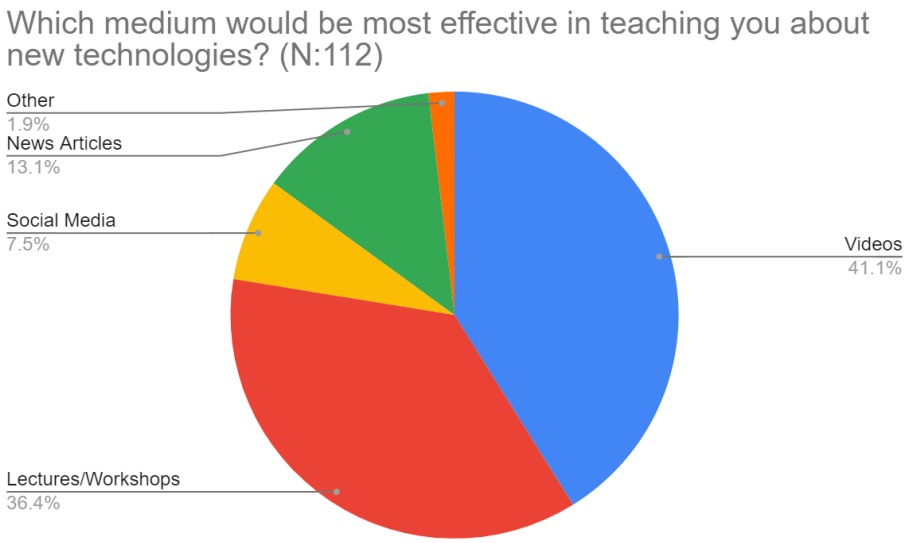

Figure 4.12: Percentage of respondents who believe certain mediums are most effective to learn about AI (N:112)

As the chart shows, the vast majority of respondents found they would be most receptive to videos or some form of in person lecture/workshop. We found this data alone very useful for the SATW, but we also thought it would also be interesting to see if age played a factor in our respondent's answers. In Figure 4.13 we see the responses to the question from Figure 4.10 by those who are aged 15-25 and those aged 26+. While the charts continue to be dominated by videos and in person lectures/workshops, they show that the older respondents much preferred lectures/workshops, at 53.6% of responses, while the younger surveyed population preferred videos at 46.2% of responses. This shows how different approaches may be necessary to reach different portions of the population.

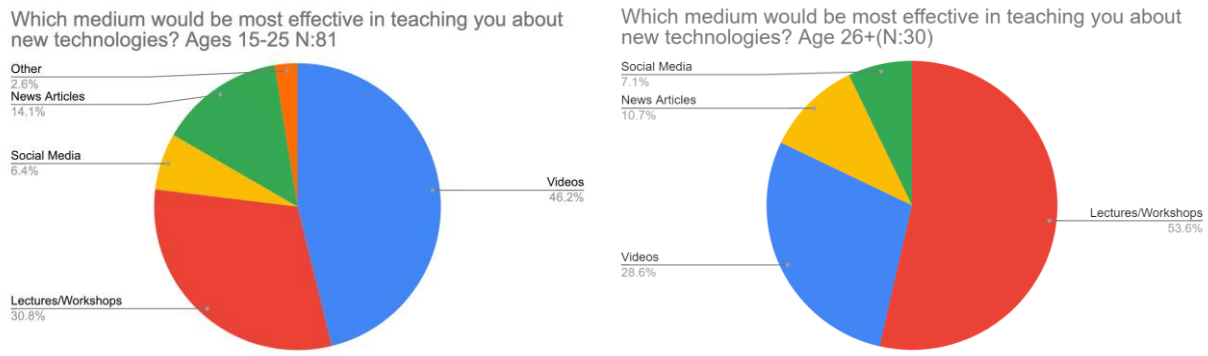

Figure 4.13: Demographic differences in percentage of respondents who believe certain mediums are most effective to learn about AI (N:81, N: 30)

We found it was useful to add some more specific questions to our survey to get more data on exactly how to get AI information to the Swiss people through these videos and workshops. The first question we asked involved the type of workshop that the people would prefer to attend. As seen in Figure 4.14 the most popular types of workshop on AI were expert panels with Q/A and small group discussion. This was encouraging to see, as in one of our interviews one expert's main point was the importance of getting people in the same room to have a conversation about AI, preferably a smaller group. Thus it was good to see that the two most popular responses involved interaction of the people with experts and one another.

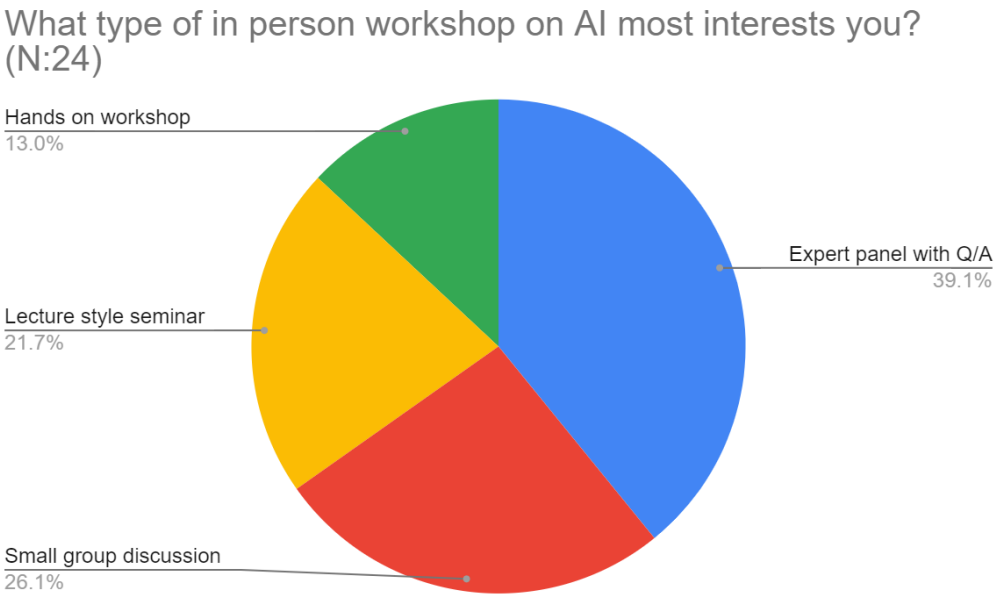

Figure 4.14: Percentage of respondents who found specific workshops most interesting (N:24)

Since the older age group was also more interested in workshops, we looked specifically at what type of workshop they would be interested in. The sample size for this particular graph is fairly small, so the results are not absolute, but we can see in Figure 4.15 that an expert panel with Q/A continues to be the most popular, with 50% of the 26+ year old's giving this response. This is good to see as it seems interaction between experts and the Swiss public is desired and potentially effective.

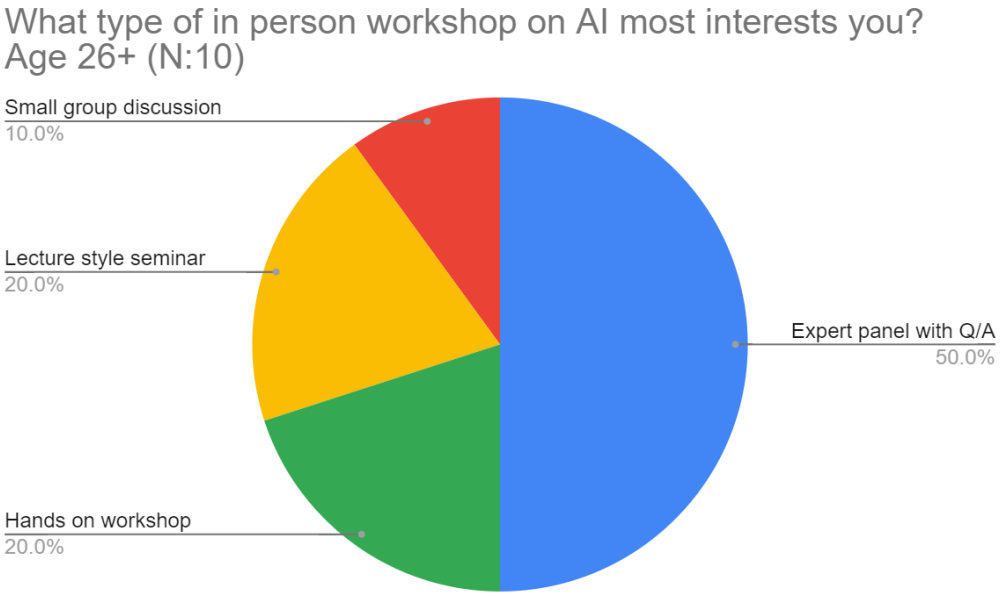

Figure 4.15 Percentage of age 26+ respondents who found specific workshops most interesting (N:10)

We asked our surveyed public a few more specific questions on the type of informational video they would prefer, and where they would be most likely to watch such a video. In Figure 4.16 we can see that by far, the majority of the respondents would most like to watch videos about where AI is currently present in their lives/society today, as well as a potential future scenario with AI in society.

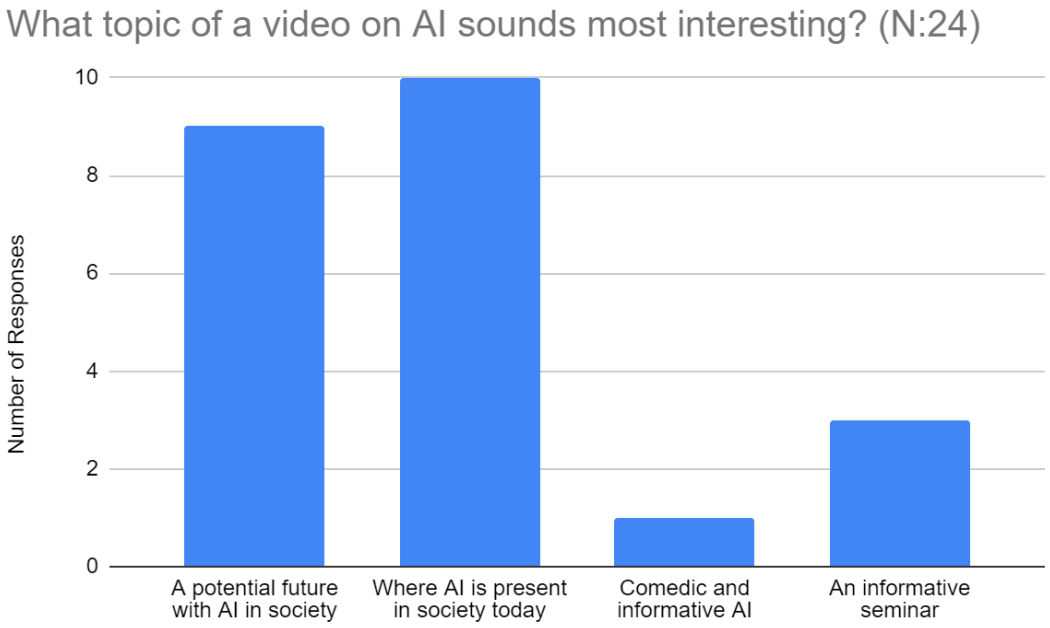

Figure 4.16 Number of respondents and what topic of video on AI sounds most interesting (N:24)

Since the younger crowd is more interested in videos than the workshops, we analyzed their responses alone to see if they differed at all from the overall surveyed population's answers. However, the younger age group's responses were very similar to the responses of all respondents, as they continued to show that "a potential future with AI in society" and "Where AI is present in society today" are the most popular topics.

We asked where people where they would be most likely to watch a video about AI. In Figure 4.17 our graph shows that most respondents would like to watch a video about AI on YouTube, while some would also be interested in watching these videos on social media such as Facebook or Twitter. Using observations from the Digital Switzerland conference we attended we found that the use of social media could be effective by amplifying the effectiveness of other methods, as we witnessed multiple reporters tweeting images and information about the event. In

a similar vein, social media may also be able to be used to increase the exposure of the informative video. Even if the video is initially posted on YouTube, it could then be shared on social media such as Twitter to get it to reach a broader audience.

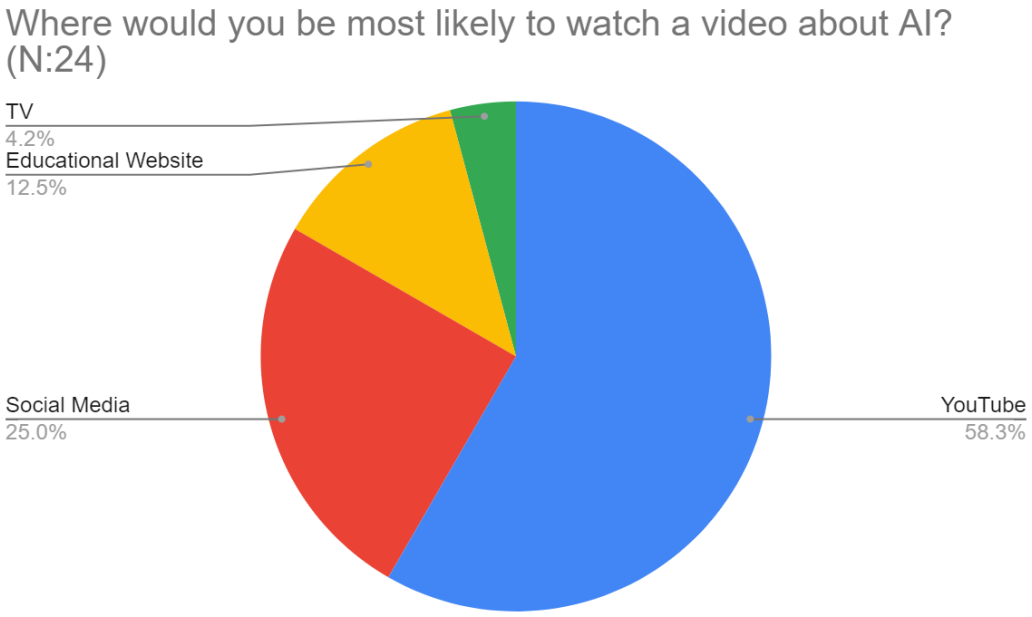

Figure 4.17 Percentage of respondents who are likely to watch a video about AI through a specific medium (N;24)

As mentioned previously when we discussed which topics of videos would be most interesting to the portion of the public we surveyed, our surveyed population had an interest in learning where AI is present in society already today. In addition to the data presented in Figure 4.16, it was also the consensus of many of our interviewees that putting a focus on where AI is currently implemented in society would be extremely important, as they feel the Swiss public does not know where it is. By relating AI technology to the Swiss public's lives, the experts think it will be much easier to get them interested in the topic and keep them better informed and involved in the AI conversation.

In addition to the data gathered from our survey, it was also expressed several times in our interviews that policy makers should be targeted with education efforts. It was the belief of one of our interviewees that if policy makers were properly informed on AI, then this could encourage the followers of said policy makers will be much more open to being approached on AI, and will be more likely to inform themselves on it. In addition to this, if policy makers are properly informed on AI they are then properly equipped to make responsible decisions on legislation regarding the use of AI in Switzerland.

4.4 Future Improvements

As we have now reached the end of our research, we can look back and evaluate our work and what we could have improved upon. This section can especially be helpful for SATW to get an understanding of what to look out for, or avoid when and if they decide to continue the work. These improvements include, defining our goal, continuously updating our survey, as well as reaching out to focus groups earlier.

First when it came to defining our goal, it was mentioned to us that it is important to know exactly what our goal is, whether that is teaching the public about AI or creating an environment where a dialogue around the subject can be maintained. After careful consideration, we realized that our project's goal was more focused around maintaining a dialogue amongst the public so that people can be properly informed when making important policy decisions. In regards to our survey, we have learned the importance of continually looking through our data and responses, so that we can make edits and update it as we see fit. We decided half way through the seven-week mark of our project that we wanted to add some more questions to gain a better understanding of what the public's opinion is on some more specific topics. Because we

created the new questions and began distributing them half way through our survey work, we did not get as many responses as we wanted. So, in the future, it is much more efficient to be looking through the data continuously rather than towards the end. Lastly, although we did reach out to some companies and organizations in hopes to bring people together for a focus group, we were not able to, as we should have asked ahead of time. So, something to keep in mind is to be reaching out to companies or organizations of interest ahead of time so that that the plans are planned out better and more effectively.

4.5 Overall Summary of Results and Analysis

In this chapter we presented the data that allowed us to achieve our three objectives that helped us to reach our overall goal. In order to determine better ways to inform the Swiss public on AI and include them in the dialogue on it, we got an idea of the respondent's current knowledge and opinion of AI, where they currently get their information about AI and finally how they would like to be approached with information about AI. The only caveat being that a large portion of our respondents were students from ETH Zurich, meaning the data is skewed towards those who are younger with a more technical background. We also reflected on a few ways that we would have done things differently. In our next chapter we will provide the conclusions our analyses led us to, as well as our final recommendations for the SATW.

5. Conclusions and Recommendations

In this chapter we will summarize the conclusions we have reached based on our results and explain several recommendations we have arrived at for use by the SATW. These recommendations will address one of three objectives: assessing what our surveyed population knows about AI as well as their opinions on it, assessing how the surveyed population currently gets their information and finally what the most effective methods are to include the Swiss public in the dialogue of up and coming technologies, such as AI.

5.1 Conclusions

In this section we list the final conclusions we have come to from the data gathered to achieve each of our objectives.

5.1.1 Our Respondents Understanding of AI

- Our respondents had at least a general understanding of what AI is.
- Most are able to identify at least some form of AI in society.
- Those who placed themselves lower on a knowledge of AI scale also said that they do not or do not know if they see AI in their everyday lives.
- People generally see the use of AI in society as useful and beneficial, however, they also recognized the possible risk it can pose.
- There is generally a more positive, though still tentative, opinion of AI, and generally people said that they would be interested in learning more.

- The population surveyed seems to be well aware of stigmatization of AI but is less informed on the details and inner workings of it.

5.1.2 Where Information on AI is Accessed

- The respondents generally received information on AI from print and web sources/media.
- The majority of those surveyed haven't been taught about AI in their formal education.
- The events held to inform people on AI is that typically, they target those who are already interested in AI or have positions in fields where they would already be educated on AI.
- According to our interviews this information gathered from the media may not be pertinent to AI as it is today, leading to some overhype and misinformation on AI.
- If the population is accessing biased or untrue articles or videos, then these misleading ideas about AI can propagate.
- Most surveyed are at least mildly comfortable with the idea of implementation of AI in society.
- It was the consensus that the people want to have a say in applications that would affect them on the day to day.
- From our interviews, the main methods currently being implemented was the use of workshops and lectures.

5.1.3 Educating on AI

- What is most important for the public in AI education is applications that affect their everyday life (Eg. autonomous vehicles and security).
- In terms of how the surveyed population would like to be informed, the team concluded that videos, lectures and workshops are what the respondents want.

- There is a slight difference within age groups where the 26+ year olds prefer lectures/workshops over videos while the age 15-25 group preferred videos.
- In regards to these workshops, through our surveys it was decided that expert panels with Question/Answer segments garnered the most interest from respondents.
- It may be more memorable for those involved if they were able to engage with both the experts and the technology. Interactivity in general was highlighted as an effective aspect to these teaching methods.
- The content of these seminars should include both where AI is present in today's society and what the future may look like with AI.
- Using different case studies it can be concluded that exposure and perceived ease of use are both important in teaching new technologies.
- There are several effective classroom strategies. The most effective of these, verified by interviews, would likely be interactive lectures.
- It was also expressed several times in our interviews that policy makers should be targeted with education efforts.

5.2 Recommendations

This section will focus on our final recommendations to the SATW, based on the conclusions from our research. The suggestions we have come up with include different methods of teaching styles and platforms as well as topics to focus on. We have also summarized a few of the things we would do to continue the work or expand it if we had enough time, which can be used by SATW to get some ideas or decide what to do next.

5.2.1 YouTube Video

We recommend SATW create a video or series of videos to reach the public with the information they are looking to broadcast. Therefore, it could be effective to create these videos on YouTube focused around subjects that affect the Swiss public's everyday life.

5.2.2 Events

This recommendation is creating events where speakers and the public can have discussions while simultaneously learning from each other. We found that maintaining a dialogue is important to be able to have a two way street between the lecturers and the audience. This involves having an environment where the public has the chance to ask questions and be involved in a discussion rather than passively listen.

5.2.3 Combination

We recommend combining the last two methods of videos and events and creating one event or workshop that could be recorded and then broadcast on YouTube. This saves time as well as money, since it is free to upload a video online. Even though there are many videos on YouTube around the topic of AI, there are not many targeted towards the Swiss public, especially in different languages, as most are in English. This method can also be more interactive by having the videos be live or including questions that need to be answered on the viewers screen.

5.2.4 Collaboration

There are many organizations in Switzerland, such as SwissCognitive and the University of Zurich, all working towards a common goal: creating an environment where people have discussions on the topics of AI such that they are properly informed on the topics. Thus, an

important recommendation is constantly striving to collaborate with these organizations to share each other's progress and help each other grow.

5.2.5 Focus on AI in Today's Society

Our last recommendation involves the content of the information that could be spread rather than the methods. In general, the public seems most interested in the areas of AI that they encounter on an everyday basis and have to live with in society. These include topics such as autonomous vehicles (e.g. Tesla), personal assistants (e.g. Siri) and cybersecurity. Therefore, if the topics discussed are focused around these subjects, there may be a higher level of interest from the public.

5.3 Next Steps to be taken

The next steps we believe SATW should consider include having focus groups, broadening the spectrum of the surveys and interviews as well as looking into more specific interests of AI.

5.3.1 Focus Groups

At the beginning of our project, we had planned on carrying out one or two focus groups, with people from different backgrounds; however, unfortunately, we were not able to achieve this plan. Thus, a next step to be taken is to put together some focus groups including people such as students, faculty, employees, or business experts to gain some more information on the subject. These groups can give a better understanding of what an informative dialogue surrounding the topic of AI would look like, as well as some insight on some more specific

topics of AI that interest people, and a more accurate estimate of what the current level of knowledge around the subject is.

5.3.2 Broadening the Spectrum

A next step that could be taken is to broaden the spectrum of responses from the interviews and surveys to include older and younger generations, people from different backgrounds and levels of education as well as populations from more rural areas. Especially broadening to more mountainous areas could bring some interesting results as the people in rural areas most likely do not encounter the same technologies that people in bigger cities do. An interesting addition to the research could also be seeing if there are any differences in opinions or levels of knowledge amongst the various regions of Switzerland that include any language barriers as well.

5.3.3 Specific Research

Finally, another step that can be taken to further the project and its research is focusing the scope of the project to a more specific area of AI. So far, we have been fairly broad with the topic of AI, so it could be of interest to see if the opinions or knowledge of the public changes when asked more specific questions and seeing how the methods recommended can be applied to those. This could be especially helpful to decide what medium can be used to reach the public for a specific topic and seeing if some areas of AI are better taught through some media than others.

5.4 Summary

In conclusion, our final recommendations include:

- Creating a video or a series of videos on YouTube with a focus on the current applications of AI as well as the potential future of it
- Events that create an environment where the audience can ask questions and have a discussion with the experts
- Maintaining a focus on where AI is applied in society today and affecting people's lives
- Combining those two methods to provide an interactive way of learning as well as reaching the largest population possible
- Collaborating with other companies and organizations to combine forces, and keeping the focus on things that interest the public

Steps to be taken next include: organizing focus groups, broadening the spectrum of the populace and diving into more specific topics and areas of AI.

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Appendix A: Sponsor Description: Swiss Academy of Engineering Sciences (SATW)

The Swiss Academy of Engineering Sciences (SATW) is a politically independent and non-commercial network of engineering and technology experts working to inform Swiss politicians and citizens about up-and-coming technologies (Ohler, 2017). The organization has a number of missions it hopes to accomplish; however, they can be summarized into the overall goal of identifying new technologies and informing Swiss citizens and politicians about them, as well as maintaining an open dialogue with these people about these technologies. This mission is aimed at supporting the organization's goal of promoting the use of new technologies to further technological development and support the economy.

SATW is comprised of 350 members as well as 50 member organizations, with members being experts from various fields (Ohler, 2017). The president of SATW is Willy R. Gehrer and the vice president is Dr. Monica Duca Widmer. The members of SATW are separated into various committees or groups, such as the Executive Committee or the Nominee Committee. These members are appointed for life, and have a heavy focus on promoting interest and understanding about technology. The many experts from different fields are brought together for the purpose of spreading information and improving understanding about emerging technologies. A detailed organizational chart of SATW is shown below in Figure A-1.

Much of the funding that SATW receives and uses to promote their cause is obtained through the government and some may come from the 55 organizations that are members of this network (Ohler, 2017). The organizations join SATW to help further the cause of technological education

for the public, and once they are members, these organizations are able to apply for grants in order to fund technological projects and hold events to further inform the public. The organization itself has collaborated with a number of member organizations, some of which are "Biotechnet Switzerland", "Chambre Suisse des Experts Judiciaires Techniques et Scientifiques (SWISS EXPERTS)", "Fachkonferenz Technik, Architektur und Life Sciences (FTAL)", "Gesellschaft für die Geschichte der Geodäsie in der Schweiz", "IT'IS Foundation Swissuniversities", "Swiss Chemical Society (SCG)" and many more.

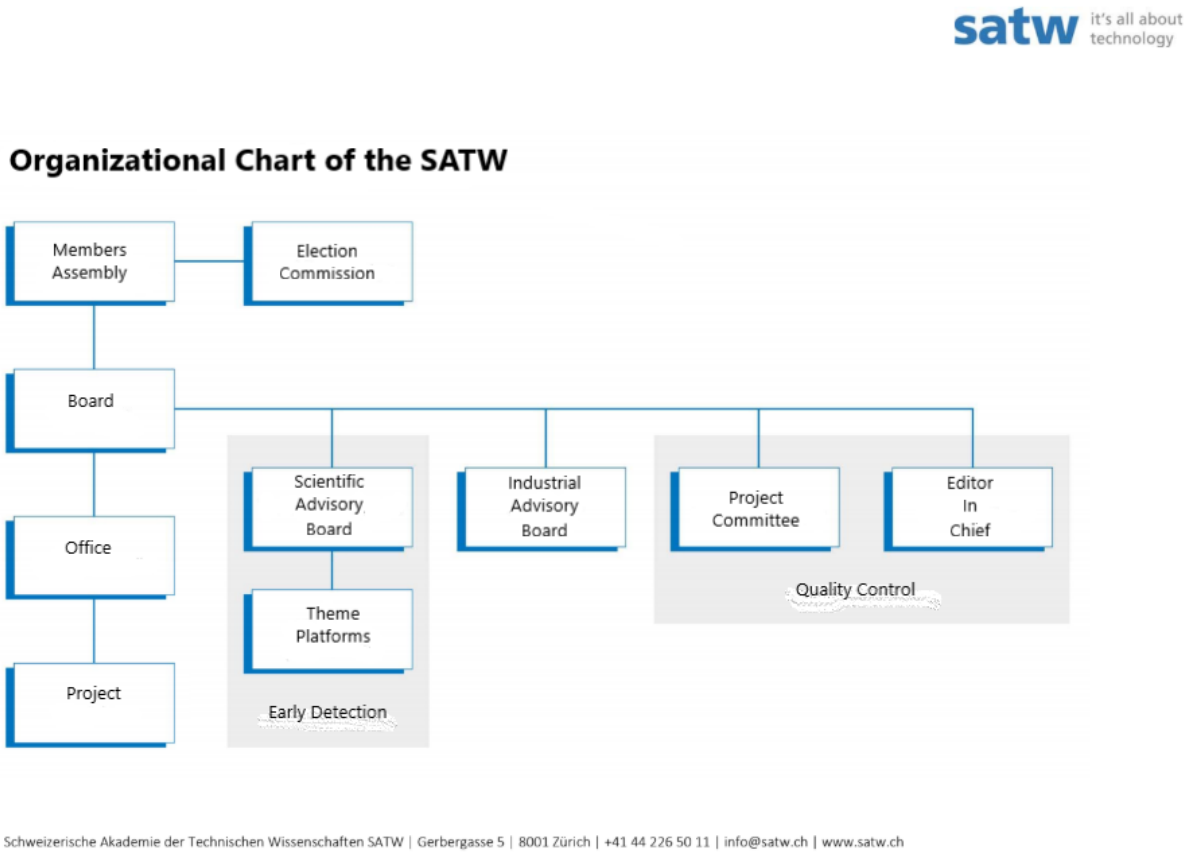

Figure A-1: Organization Chart of the SATW (Ohler, 2017)

Appendix B: Survey in German/English

Artificial Intelligence

The purpose of this survey is to establish how much the Swiss citizens know about artificial intelligence and to establish how the population of Switzerland would like to be approached to learn more about artificial intelligence. These results will be reported to the Swiss Academy of Engineering Sciences (SATW). In doing so, the Academy will initiate measures to inform those who are not experts in AI but are interested in learning about these developing technologies. It is possible that these results will be published in an anonymous fashion.

I. This is to establish an understanding of the demographics of the people being assessed.

How old are you?

15-25 26-40 41-60 61 and over

What is your level of education?

Vocational school. University. Masters Teaching school PHD

II. The following questions are to establish survey participant's previous experience with AI.

What level of knowledge do you feel you have on artificial intelligence?
(1 being "I do not know what artificial intelligence is" and 10 being "I am thoroughly educated in artificial intelligence and its development")

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Do you encounter artificial intelligence in your everyday life?

YES NO I don't know

If yes, please name any examples of artificial intelligence you use in everyday life.

Were you taught about AI in your formal education?

YES NO I don't know

Have you watched movies or other media that included artificial intelligence?

YES NO

If yes, has this media influenced your opinion on AI?

YES NO

III. *The following is to establish the survey participant's baseline feelings regarding AI.*

Do you feel artificial intelligence is good for businesses?

YES NO It depends

Do you think artificial intelligence will benefit or harm society/people?

Benefit Detriment Both

How do you feel about AI technologies? (1 being "I am terrified of the prospect of artificial intelligence's use in our society" and 10 being "I am entirely comfortable with AI being used in society")

1. 3. 4. 5. 6. 7. 8. 9. 10.

IV. *The following questions are to establish education preferences for survey participants.*

Are you interested in learning more about AI?

YES NO

Which existing sources do you know and use to learn more about AI?

I. Online II. TV III. Printed/Books/Magazines IV. Workshops
V. Others …….

If you were to attend an educational seminar on AI, what would you want to learn the most about?

I. Development of AI II. Regulation of AI III. Future of AI IV. AI in everyday life
V. Others …….

What form do you find to be the most effective way for you to learn about new technologies?

I. Seminars/Workshops II. Videos III. News Articles IV. Social Media
V. Others …….

Where would you be most likely to watch a video about AI?

I. YouTube II. Educational Website III. Social Media (Twitter/Facebook)
IV. TV

What topic of a video on AI sounds most interesting?

I. Where AI is present in society today II. A potential future with AI in society
III. An informative seminar IV. Comedic and informative AI

What type of in person workshop on AI most interests you?

I. Lecture style seminar II. Expert panel with Q and A
III. Small group discussion IV. Hands on workshop

Are there specific application or aspects of artificial intelligence you would like to learn about?

I. Autonomous Cars II. Social Media III. Personal Assistants IV. Security V. Others

What are your greatest concerns about the use of AI?

I. Job Security II. National Security III. Privacy IV. Safety V. Robots VI. Others

Is there anything else you would want to learn about artificial intelligence?

Would you want to have a say in how AI applications are designed, e.g. in terms of privacy or safety and security?

YES NO

If yes, how would you like to participate in such a process?

I. Online Platforms II. Workshops III. Events/conferences IV. Others …..

Künstliche Intelligenz

Ziel dieser Umfrage ist es festzustellen, wie viel die Bürgerinnen und Bürger über künstliche Intelligenz wissen und wie die Bevölkerung der Schweiz angesprochen werden möchte, um mehr über künstliche Intelligenz zu erfahren. Diese Ergebnisse werden an die Schweizer Akademie der Technischen Wissenschaften (SATW) übermittelt. Anhand deren wird die Akademie Folgeaktivitäten initiieren, um jene zu erreichen, die keine KI-Experten sind, aber Interesse daran haben, diese sich entwickelnde Technologie kennenzulernen. Es ist möglich, dass diese Ergebnisse anonym veröffentlicht werden.

I. Dies dient dazu, demografische Angaben der zu befragten Personen zu erfassen.

Wie alt sind Sie?

15-25 26-40 41-60 61 und älter

Was ist Ihr Bildungsniveau?

I. Berufslehre / -schule II. Maturitätsschule, Berufsmaturität, Diplommittelschule III. Höhere Fach- und Berufsausbildung IV. Fachhochschule V. Universität

II. Die folgenden Fragen dienen dazu, die bisherigen Erfahrungen der Umfrageteilnehmer mit KI zu ermitteln.

Welchen Wissensstand haben Sie in Bezug auf künstliche Intelligenz? (1 ist "Ich weiß nicht, was künstliche Intelligenz ist" und 10 ist "Ich bin in künstlicher Intelligenz ausgebildet und weiss, wo sie eingesetzt wird")

1. 2 . 3. 4. 5. 6. 7. 8. 9. 10.

Haben Sie in Ihrem Alltag Erfahrungen mit künstlicher Intelligenz gemacht?

Ja. Nein.

Wurden Sie in Ihrer schulischen Laufbahn über KI unterrichtet?

Ja. Nein.

Können Sie Beispiele für künstliche Intelligenz nennen, die Sie im Alltag verwenden?

Haben Sie Filme oder andere Formen von Medien gesehen, die künstliche Intelligenz thematisieren?
Ja. Nein.

Wenn ja, haben diese Medien Ihre Gedanken über Kunstliche Intelligenz beeinflusst?

Ja. Nein.

III. Die folgenden Fragen dienen dazu, die Grundhaltung der Umfrageteilnehmer gegenüber KI zu ermitteln.

Glauben Sie, dass künstliche Intelligenz für die Wirtschaft gut ist?
Ja. Nein.

Glauben Sie, dass künstliche Intelligenz der Menschheit nützen oder sie schädigen wird?
Vorteil. Nachteil. Beides, kommt darauf an.

Wie eingeschüchtert sind Sie von künstlicher Intelligenz? (1, Überhaupt nicht, sie ist sehr gut / 10 ist ich bin sehr besorgt vor dem Einsatz/der Nutzung künstlicher Intelligenz in unserer Gesellschaft.)

1. 2 . 3. 4. 5. 6. 7. 8. 9. 10.

IV. Mit den folgenden Fragen sollen die Bildungs Präferenzen für die Umfrageteilnehmer festgelegt werden.

Wenn Sie an einem pädagogischen Seminar über KI teilnehmen würden, was würden Sie am

liebsten über KI lernen?

I.Die Entwicklung bzw. Herstellung von AI II. Regulierung bzw. Steuerung von AI

III. Zukunft der KI IV. KI im Alltag

V. Andere …….

In welcher Form lernen Sie neue Technologien am effektivsten kennen?

I.Seminare II. Videos III. Nachrichtenartikel IV. Sozialen Medien V. Andere …..

Wo wurden Sie ein Video über KI sehr wahrscheinlich zuschauen?

I. YouTube II. Didaktisch Website III. Sozial Medien (Twitter/Facebook)
IV. TV

Ein Video über welche KI Theme scheint am meistens interessant?

I. Wo KI ist in die Gesellschaft heute II. Eine mögliche Zukunft mit KI

III. Ein informativ Seminar IV. Ein lustiges und informativ Video

Welche persönliche Werkstatt über KI scheint am meistens interessant?

I. Lektur/Seminar II. Ein Gremium von Experten mit Fragen und Antworten

III. Kleine Gruppe Diskussion IV. Spielerische Werkstatt

Gibt es bestimmte Anwendungen oder Aspekte von künstlicher Intelligenz, über die Sie gerne mehr erfahren möchten?

I. Autos II. Sozialen Medien III. persönliche Hilfe IV. Sicherheit

Gibt es eine bestimmte Untergruppe künstlicher Intelligenz, über die Sie gerne etwas erfahren möchten?

I. Autos II. Soziale Medien III. Persönliche Assistenten IV. Sicherheit

Was sind Ihre größten Sorgen in Bezug auf KI?

I. Berufliche Sicherheit II. Nationale Sicherheit III. Privatsphäre IV. Sicherheit V. Roboter

Welche Art von Bildungsveranstaltung über KI würden Sie am ehesten besuchen?

Appendix C: Survey Graph Results

How old are you?

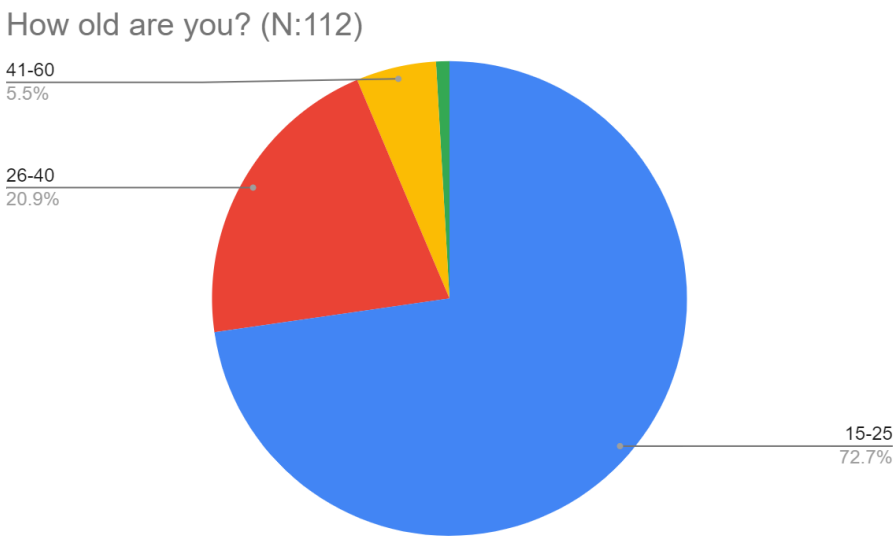

Figure C.1: Ages of survey respondents(N:112)

What is your level of education?

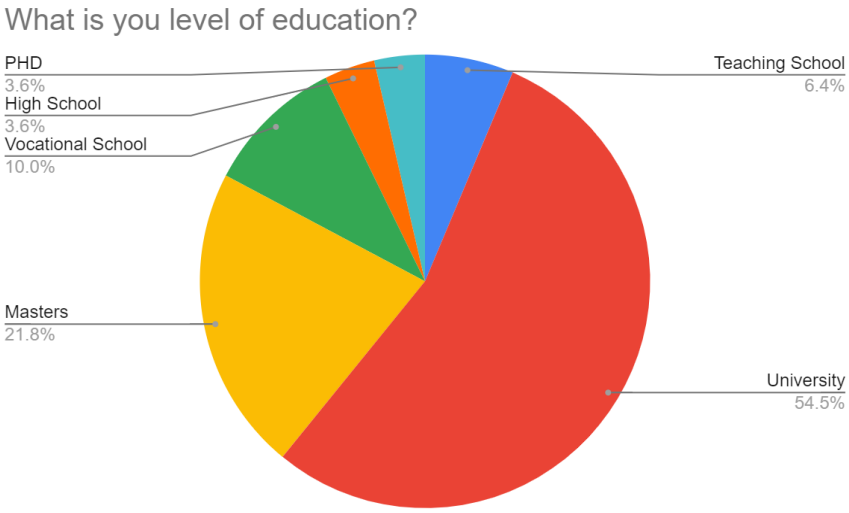

Figure C.2: Level of education of survey respondents(N:112)

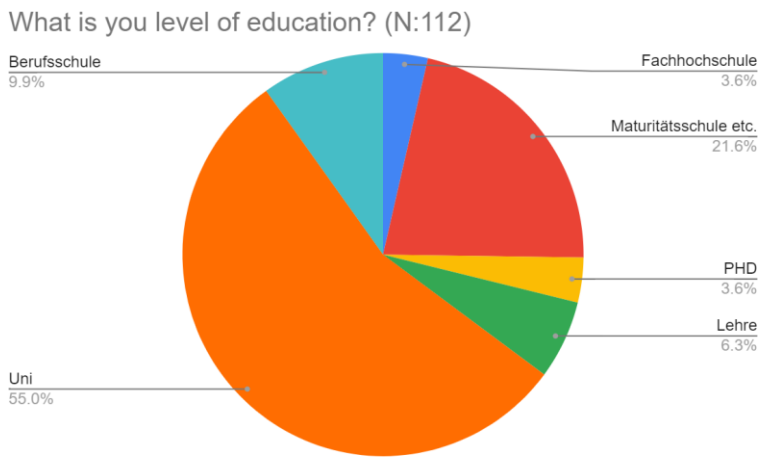

Figure C.3: Level of education of survey respondents in German(N:112)

What level of knowledge do you feel you have on artificial intelligence?
(1 being "I do not know what artificial intelligence is" and 10 being "I am thoroughly educated in artificial intelligence and its development")

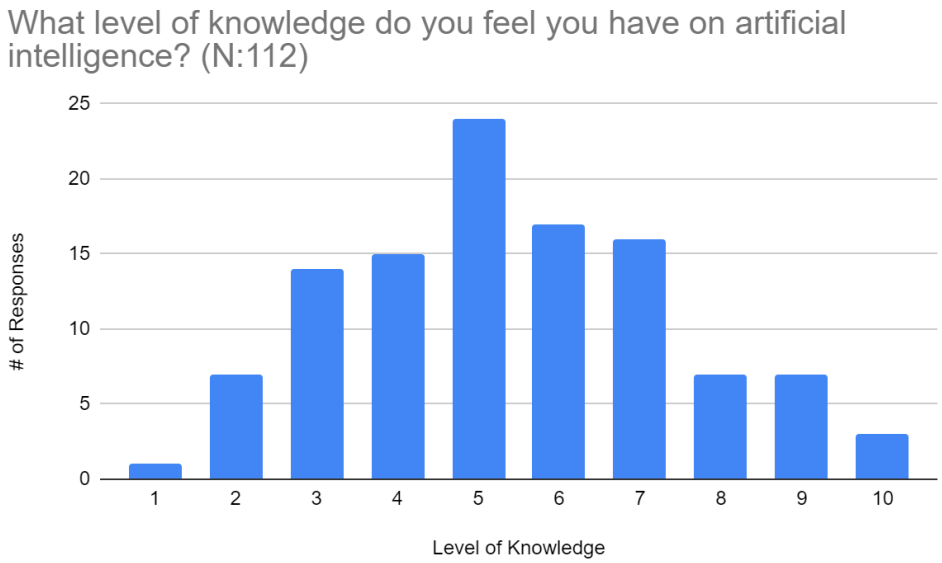

Figure C.4: What respondents believed their level of knowledge on AI to be (1 meaning they know nothing about AI and 10 meaning they are an expert on the topic) (N:112)

Do you encounter artificial intelligence in your everyday life?

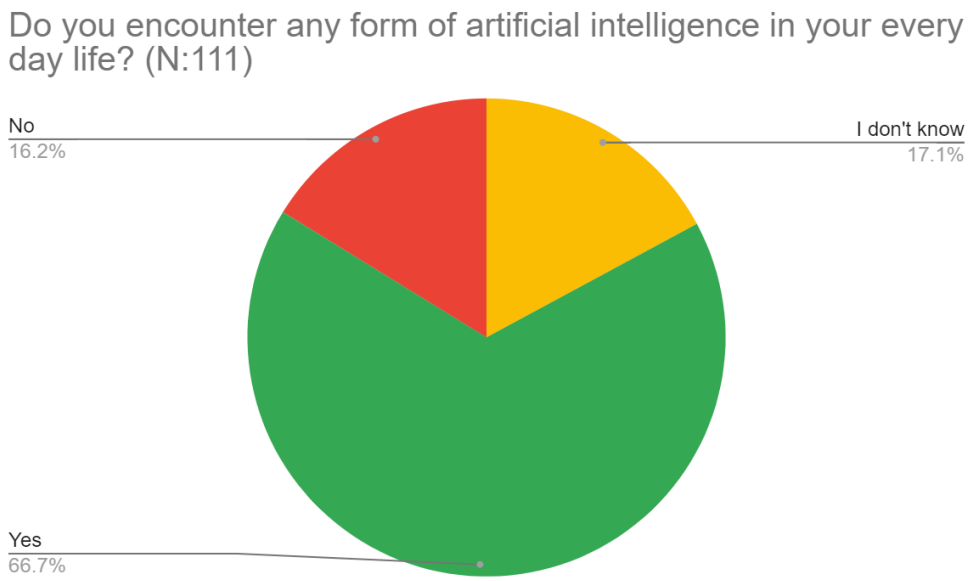

Figure C.5: Percentage of respondents who believe they encounter AI in their everyday lives (N:111)

If yes, please name any examples of artificial intelligence you use in everyday life.

Figure C.6: Wordmap of examples of AI given by respondents, size corresponding to frequency (N:111)

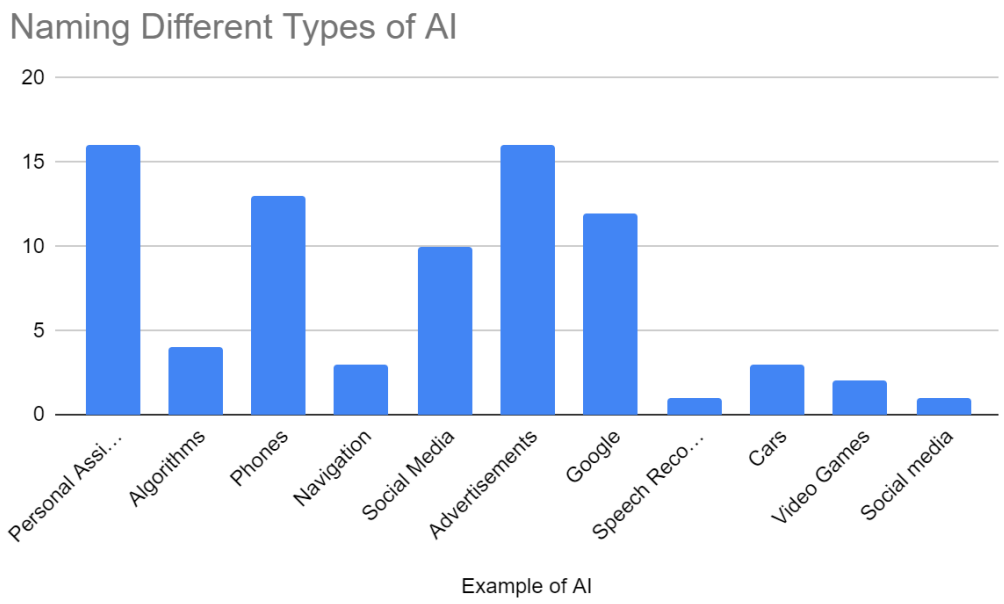

Figure C.7: Most common responses when asked for examples of AI (N:111)

Were you taught about AI in your formal education?

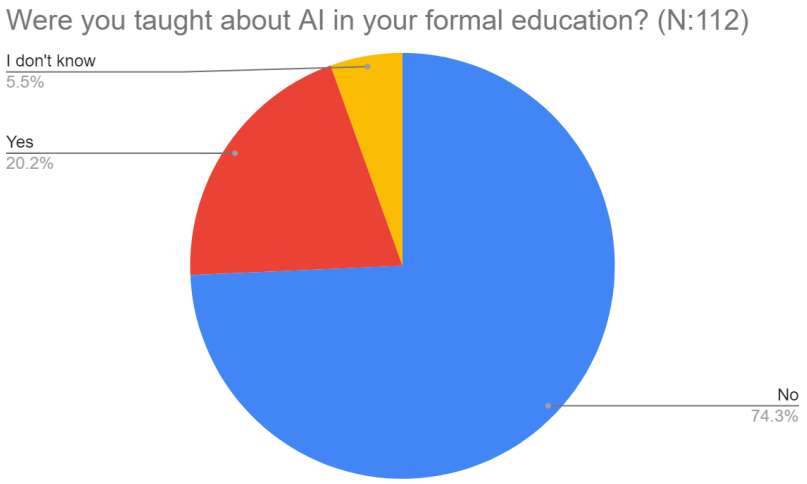

Figure C.8: Percentage of respondents taught about AI in their formal education (N:112)

Have you watched movies or other media that included artificial intelligence?

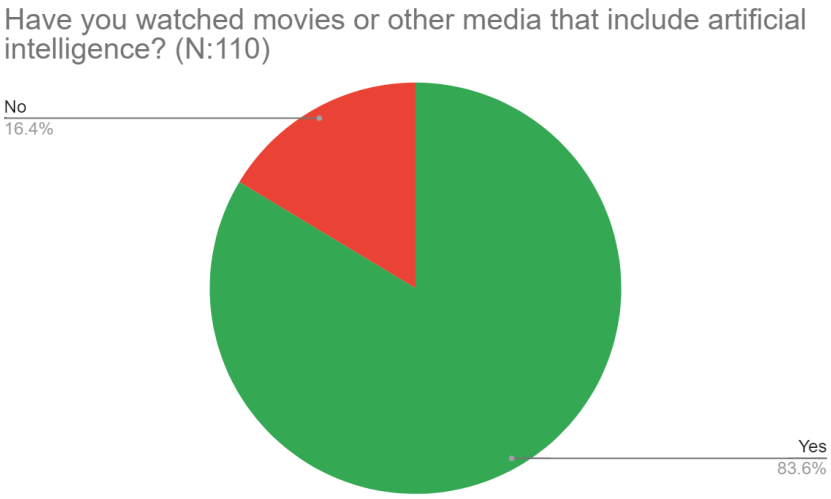

Figure C.9: Percentage of respondents who have seen media including AI (N:110)

If yes, has this media influenced your opinion on AI?

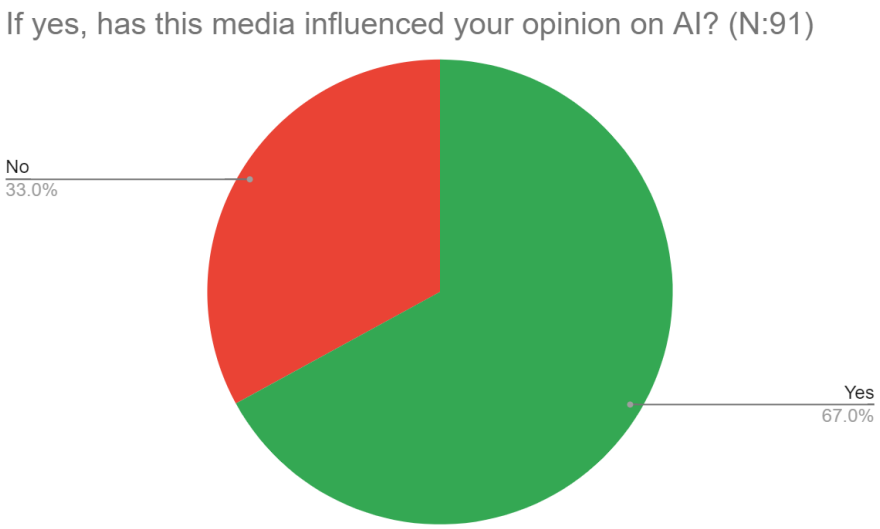

Figure C.10: Percentage of respondents who have had their opinion os AI influenced by media(N:91)

Do you feel artificial intelligence is good for businesses?

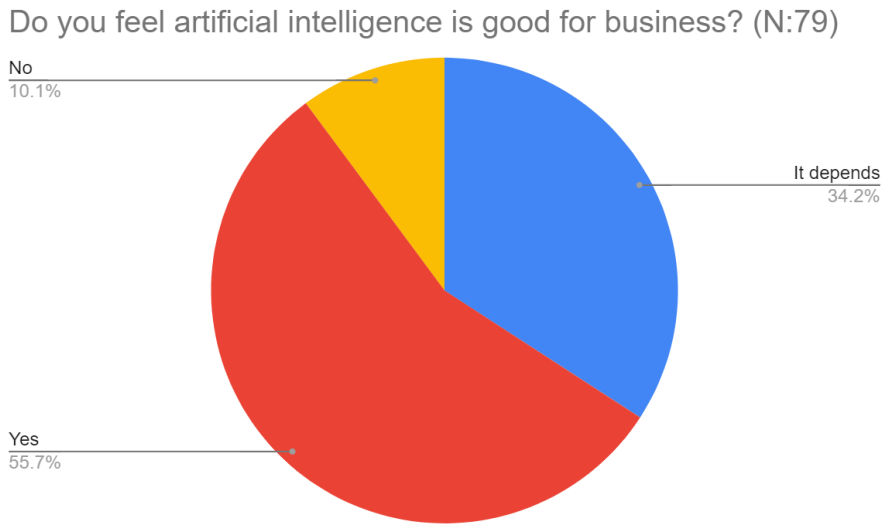

Figure C.11: Percentage of respondents who believe AI is good for businesses (N:79)

Do you think artificial intelligence will benefit or harm society/people?

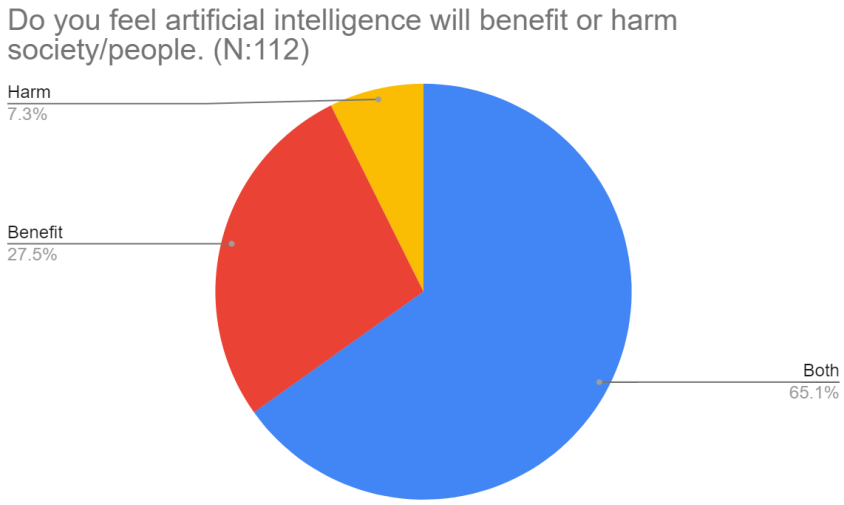

Figure C.12: Percentage of respondents who believe AI will benefit or harm society (N:112)

How do you feel about AI technologies? (1 being "I am terrified of the prospect of artificial intelligence's use in our society" and 10 being "I am entirely comfortable with AI being used in society")

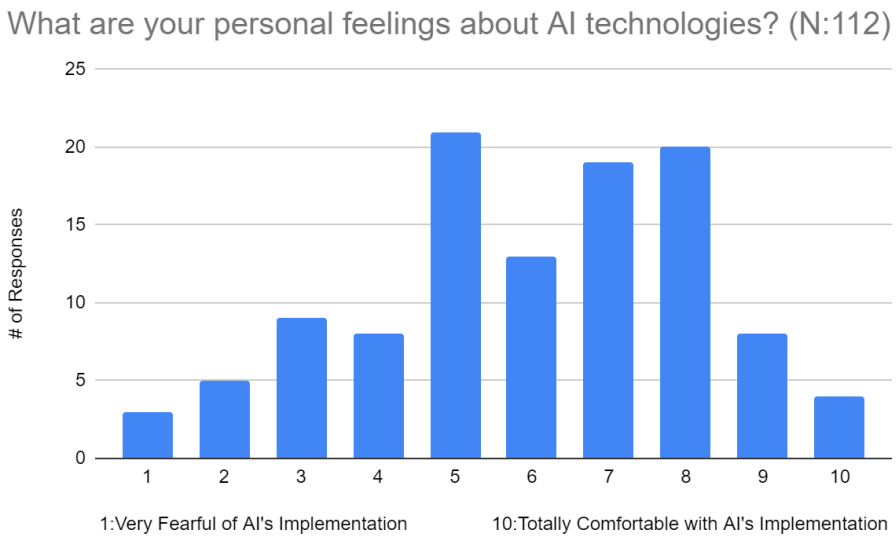

Figure C.13: Respondents personal feelings on AI (N:112)

Are you interested in learning more about AI?

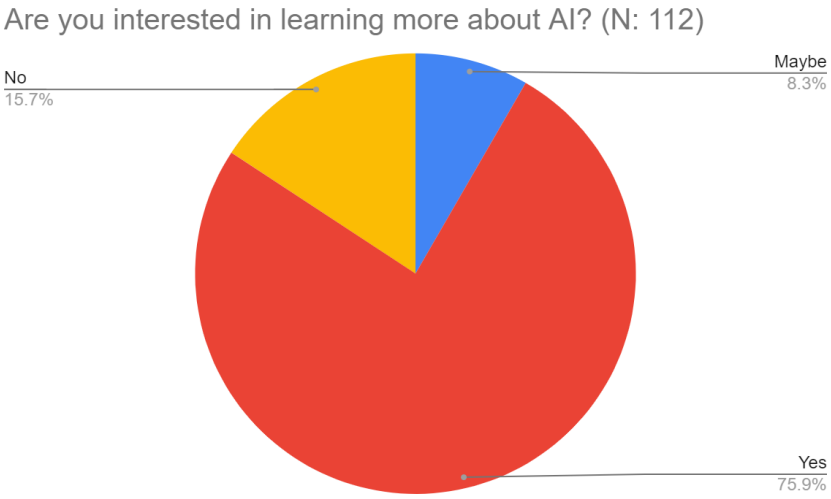

Figure C.14: Percent of respondents interested in learning more about AI (N:112)

If you were to attend an educational seminar on AI, what would you want to learn the most about?

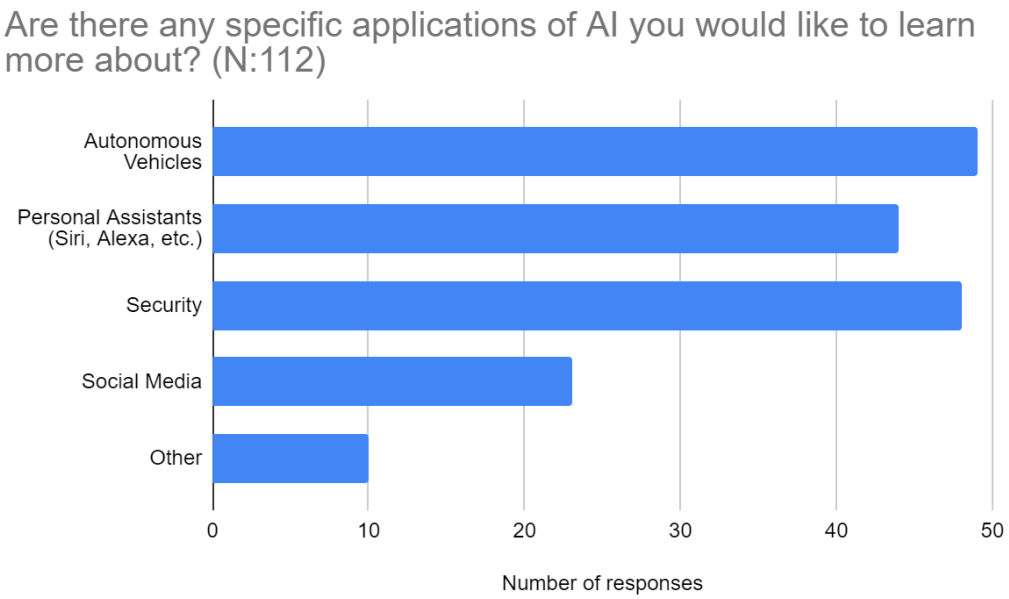

Figure C.15: Specific AI applications respondents would like to learn more about (N:112)

What form do you find to be the most effective way for you to learn about new technologies?

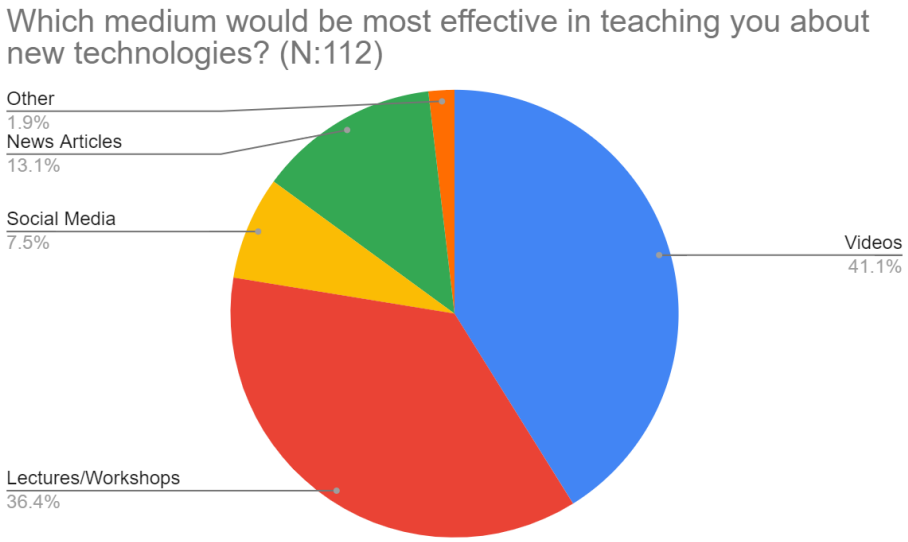

Figure C.16: Most effective mediums to teach respondents about new technologies (N:112)

Where would you be most likely to watch a video about AI?

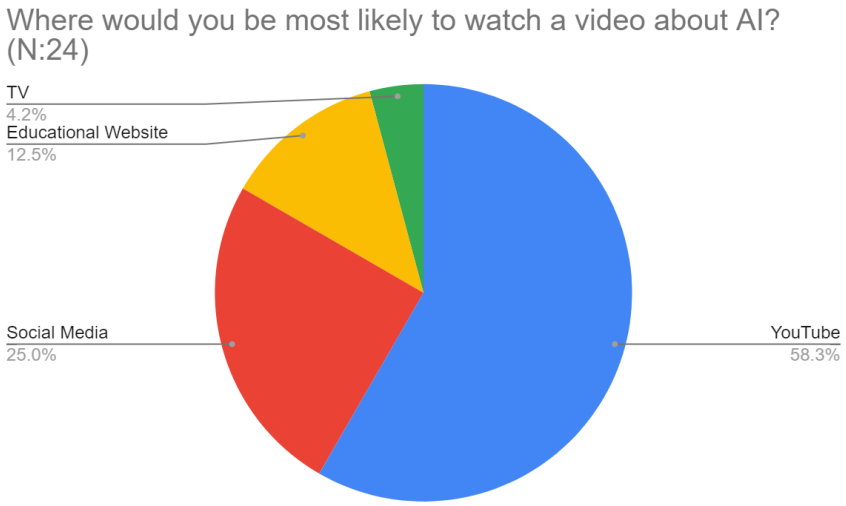

Figure C.17: Where respondents would like to watch a video about AI (N:24)

What topic of a video on AI sounds most interesting?

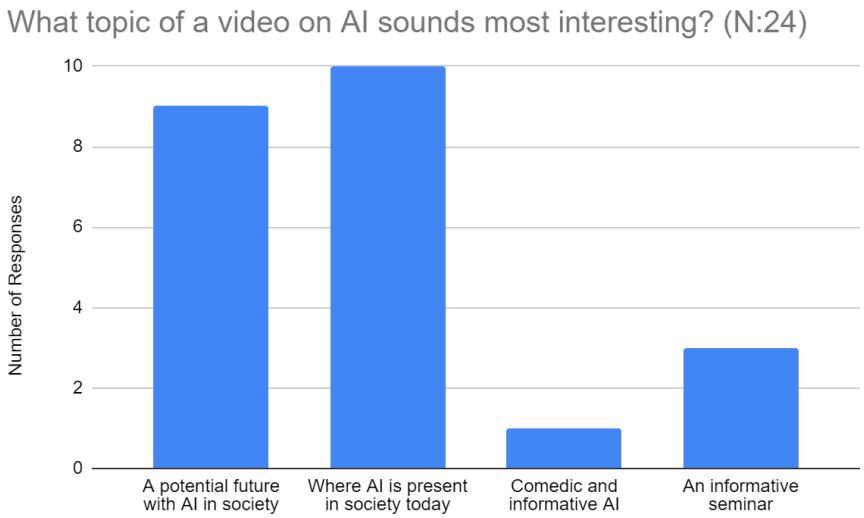

Figure C.18: Topics of video about AI most interesting to respondents (N:24)

What type of in person workshop on AI most interests you?

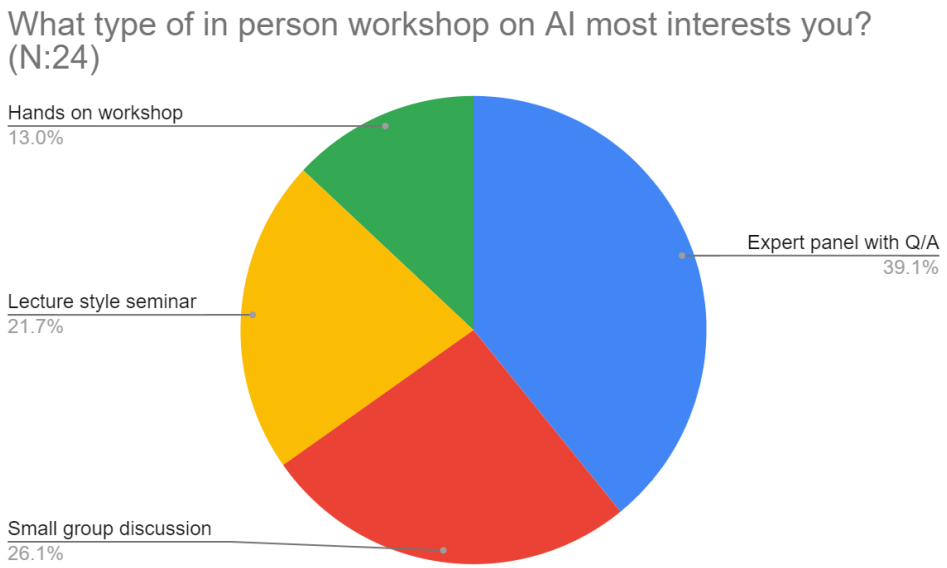

Figure C.19: Types of workshop on AI most interesting to respondents (N:24)

What are your greatest concerns about the use of AI?

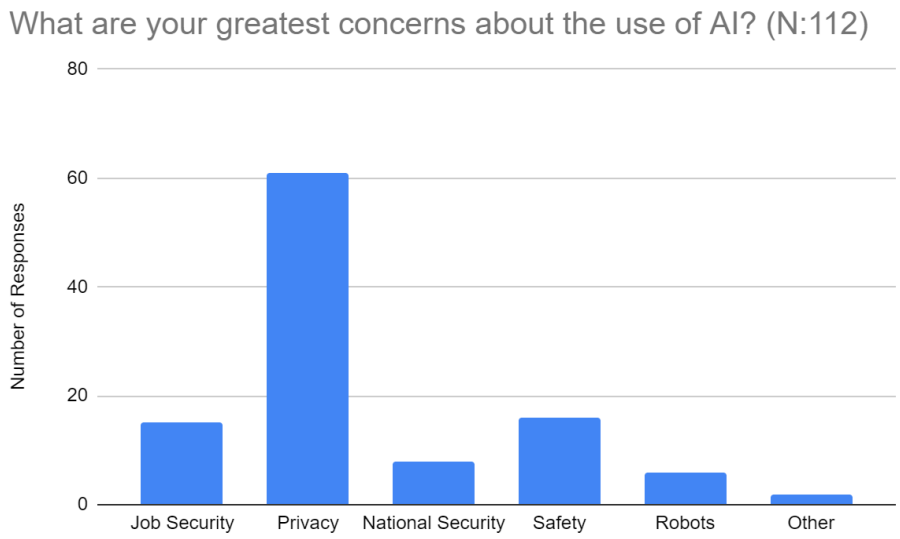

Figure C.20: Respondents' greatest concerns about the use of AI (N:112)

Would you want to have a say in how AI applications are designed, e.g. in terms of privacy or safety and security?

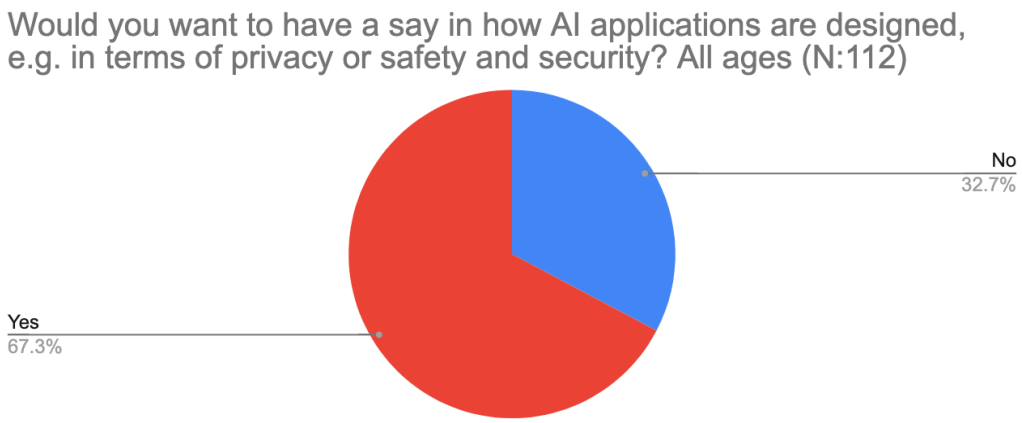

Figure C.21: Percentage of respondents who would like to have a say in the design of AI (N:112)

If yes, how would you like to participate in such a process?

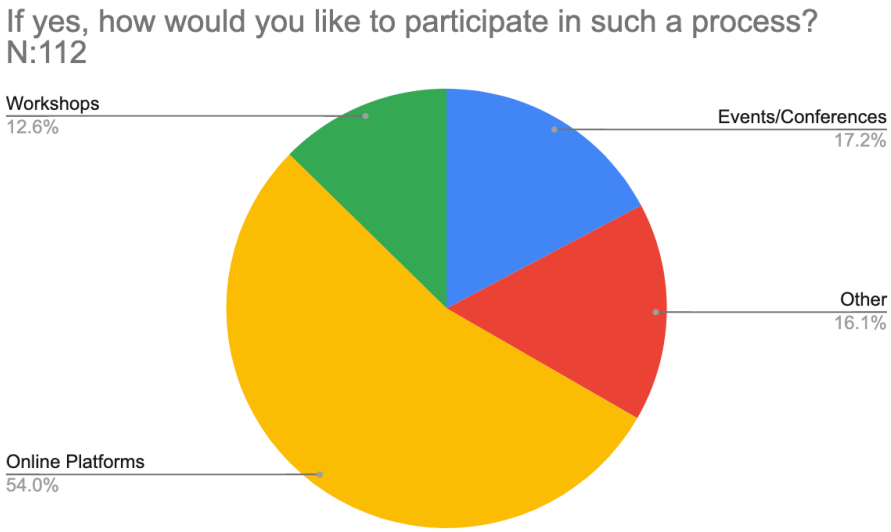

Figure C.22: How respondents would like to participate in the design of AI (N:112)

Appendix D: Interview Protocol

Inform the interviewee why we are doing this study and where this study will be used. Furthermore, ask them if they are willing to answer questions as long as their answers will remain anonymous, unless the interviewee give specific permission to being quoted as a source. Furthermore, ask if we can record their interview prior to the start of the interview.

Interviewer: *During this interview you will be asked about artificial intelligence. We hope that the questions we will ask will prompt you to think about what AI can do in your society and how you would like to be educated about AI. Please answer as honestly as you can, as there are no wrong answers.*

Our project was commissioned by the SATW in Zurich to gather information on how the people of Switzerland feel about AI and to what extent they understand AI. We are then tasked to suggest methods to better teach the swiss public about AI. We wanted to speak with you in order to gather some information on your specific expertise and experience around the ethical questions surrounding new technologies such as AI, as well as your experience with informing people on technical topics.

General Questions

1. In your opinion, is the Swiss population well-informed on AI and its applications?
2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?
3. Do you think the Swiss population need to be more informed on AI and its applications?
    a. If so, should existing activities be expanded or are new approaches required?
        i. If so, which?
    b. How does AI ask for additional involvement from the public?
    c. Should the public have a say in how AI applications are designed?
        i. If so, for which aspects and how could that be realized?

Prompting Questions:

4. In your own words, how would you describe what responsibilities you have?
5. Do you think that AI plays a role in the work that you do and the projects that you are a part of?
    a. If yes, what are some of the projects/ work that you do that relates to AI?

6. What sort of projects has your company done to try and increase the dialogue about all of the work that you do?
    a. What are some of the most effective ways that you have found of informing the public and increasing interest?
7. What specific topics have you found that people are most interested in?
8. If you were to attend an educational program on AI, what would you want to learn the most about AI? Why?
9. What method do you find to be the most effective way for you to learn about new technologies?
    a. Why?

Appendix E: Markus Christen Interview

04/09/2019

General Questions

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   The term appears mysterious, people aren't really educated. There's a current hype about it. People understand there is a long history surrounding AI but it's not really called AI. It's still very exciting but it's possible it will be very normal in 5 years. SATW is still organizing different workshops and there are several large organisations where academia and organizations come together. There's a study from the university that will disseminate information to people.

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   N/A

3. Do you think the Swiss population need to be more informed on AI and its applications?
   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         N/A

   b. How does AI ask for additional involvement from the public?

      N/A

   c. Should the public have a say in how AI applications are designed?

      Depends on the application. The most economically relevant are ways in which people are working. There are all types of machine learning which has no application to personal data or privacy. I wouldn't expect people to have a say, it's the company. Perhaps the government wants to use AI and to get social funding for it, which can have outsourced decision making. Here is where people should have a say.
      i. If so, for which aspects and how could that be realized?

N/A

Prompting Questions

1. In your work with the DSI what are some of the methods people have been most receptive to in terms of forming this dialogue on digitalization?

   One of the DSI tasks is to communicate both within the univ and to try to inform with lecture series and etc on AI and other digital tools. For the general public we have digital forum events. People are invited that are famous and then we have a public discourse.

2. We read about how you've looked into the use of video games to "promote moral competence" through Serious Moral Games, have you found this to be an effective method of reaching the public with your ideas? Do you feel this medium could be used to inform people on other topics, such as AI?

   Games are an interesting tool. We are trying to make them theory driven that has data that shows which types of visuals/ other to convey certain knowledge and psychological competence. We believe this is an instrument that works. People play and we measure before and after. Not all the changes are what we expect which is in essence science. IT is an interesting way and you have to be careful how you make them but for the young generation it is an interesting way to communicate. However it isn't easy. It's more than writing a story. There is a story component but you have to have different ways, it has to be kinda fun, there are a lot of things to consider.

3. Given your background in NeuroScience, do you feel AI could play a role in this field in the future? How do you think AI could be implemented in the medical field and your specific projects in neuroscience?

   There are places in the medical field where it is already being used (ai). It can be hard to interpret this data with machine learning. When you read the brain there are so many data points. Its very complex. Machine learning can help here and to generate some results. In particular the new ways of machine learning it can be hard to interpret what is going on in the algorithm. It poses new challenges to interpret complex data in new ways. This is definitely a new challenge in interpretation. There are a lot of people working on diagnostic medicine eg is it cancer or not. If you look at the details it becomes more complex. You need to make sure the data taken by machine a can be used by machine b. It means a lot of standardized processes. With MRI machines, every single one works a little bit

different. You have to train the machines to deal with these differences. It might be possible that each machine needs its own data that it can interpret. AI will probably not replace doctors because of these issues.

4. What are the ethical implications of having AI being used in the medical field? Do you think it is important for people to be involved in this conversation? Why?

   Ethical implications within the medical field……. The more you let the machine do you take away the workload. This is good on one hand but bad in the idea that the doctor needs that experience. 99% of autonomous driving is handled by the machine, what if you need to drive it if the machine fails? You aren't trained on it. This issue might result in wrong diagnosis.

5. What would you consider to be some of the greatest moral/ethical questions/concerns when discussing the implementation of AI into everyday technology (autonomous vehicles, personal assistants, etc.)?

   Moral/ethical questions: There are a few overall conversations. One is that you might not understand how this machine came to be. It might be that an obvious sign for us might be missed by the machine. We humans have no problem with the black box problem. The fairness and bias problem because certain data might be biased without even us knowing it. If you feed visual input in to the machine it can result in bias. For example if you look up professional hair styles it is all white people but unprofessional is all black. This could be a bias detector however. For example credit numbers finding can eliminate it. You do have to choose different levels of fairness to deal with outliers. There are ways of defining certain fairness. For example, you have protected groups like male/female. You want to decide who should pay more for insurance but you want this to be fair. The false positive rate of group a females should be the same as that of the males. Another type of fairness will have risk scores adapted to each group. These two types of fairness can not be realised at the same time. Now you have to choose which system is the better one. Who should choose which one? Is it the programmers? A vote? Who knows.There is the issue of overthrusting machines and under trusting machines. In certain conditions they believe a machine is more objective than it is. There are also circumstances where it would be better if they did trust it.

6. Why do you think it is important for the public to be involved in the ethics conversation on the use of up and coming technologies such as AI big data and cybersecurity?

   Public involved in these convos? They should obviously be included in these conversations. As soon as people are affected in their life they should be included. For example amazon. It seems to be known that amazon can trick their algorithm to sell their own products even if the algorithm dictates otherwise. In ny state

there are ways to monitor homeless people on who should have access to programs and who can not. Google the compass case- a us case using the software to evaluate if a certain prisoner should be released or not. It is a little bit disconnected but it is very complex. The company checked for one kind of fairness over the other. The judge might have a gut feeling which fairness is better. If you have to use the system you exclude the possibility of using the other.

7. What are your thoughts on AI's perception in the popular media (movies, books, news etc.) do you think it has played a positive or negative role in the public's understanding and perception of these technologies?

   AI perception in media: This was part of our ongoing study: compared to experts people have a more negative view of AI. You have the science fiction kinds of media that makes the idea that is isn't very good for humans. A lot of the current discussion that in the next move of atomization people will lose their jobs. This creates another negative feeling because it wouldn't be good for them

8. How can we inform people on AI while working with those who believe AI is not good for our society?

   Include/inform on AI? One way is to demonstrate and remind them that AI is used in various ways that are in production and other. There are certain industrial complexes that might fail but we can prepare for this There a lot of applications that are under discussed that may sway people. Another part is to remind that the fear that humans will lose their human decision and productivity because of AI is over exaggerated and discussed. There are always human ideas and experiences. The way we make decisions might change and this raises the question on how to prepare for this? This is a project we want. We are making fairness labs where you can choose different fairness options and then analyze the data. Is this what I wanted? Is this the best possible option? So should everyone be programers? We should really only train the experts

9. How can we best make such a complicated subject simple enough for everyone to understand? To what level would you think it would be important for the average citizen to understand AI technologies?

   You should have a general idea of what AI is in the same way you have a general idea of electricity. Probably more relevant is that most people have jobs and within their jobs they are more likely to interact with help. As a gardener you might have a tool to use that will help you guess where to plant and what to plant. For each profession you should have an idea as to how the tool you use work.

This can depend on the people. There is a need to generate more understanding. You know Alexa will react when you say something which implies Alexa must always be listening. You must make sure that whatever Alexa hears cannot be misused. This type of knowledge is needed.

Appendix F: Sabine Brenner Interview

06/09/2019

Personal:

1. What is your personal opinion on AI being implemented into everyday technology within our society?
    a. Do you any implementations of AI could ever harm our society, and how?

        Self-determination is important to her. Anything AI does to work with it she is pleased with. unpleased with it. Problem with public discussion/ public opinion is a value. Most educated people. Come to grips with it and most speak with platforms

2. Currently, what do you think the opinion of the general Swiss Public is regarding AI and its implementation into society?

    Problem with public discussion. In Switzerland, public opinion is a value, especially because of the politics. People mostly think of robotics. There is a non discrete fear.

3. In your work, what are some of the newest trends and developments in technology that seem most interesting to the public and have been implemented the most? Why do you think they were so successful (what made it successful)?

    Smartphone/ Siri/ Built into the system / Replies to a demand which makes it successful. A trend exploited is social media/ not relevant/ People do it cause it's part of our nature.

Company/Projects

4. In your own words, how would you describe what responsibilities you have as Deputy Head of Managerial Staff and as Head of the Swiss Digital Business Office?

    Try to develop guidelines on tech. Runs office on communications. Works with Digital Switz. Strategy and to revise guidelines. One strategy was looking into AI, however, mostly digital issues.

5. Do you think that AI plays a role in the work that you do and the projects that you are a part of?

a. If yes, what are some of the projects/ work that you do that relates to AI?

Did not have the lead on AI projects and transparency. Report published at the end of the year

6. What sort of projects has your company done to try and increase the dialogue about all of the work that you do?
    a. What are some of the most effective ways that you have found of informing the public and increasing interest?

People not paid to get together and discuss/think. State Secretariat for Education, Research and Innovation SERI. Large working group. Work together to think about issues to deliver report to federal council. Technological foresight. Stakeholders come together to discuss findings. Report to Parliament. Shape discussion. Work on strategic level that isn't as interesting. Technology Swiss comes up with findings that are more based on numbers rather than feelings. Don't target the fear, but deliver neutral info

7. What specific topics have you found that people are most interested in?

Work issues are the most interesting, and health. People concerned about what is going to happen to them. Humane? Work, health, education, public discourse and opinion most interesting to people. Not interested in the business side as much. Insurance is the exception

Digital Switzerland Conference:

8. When it comes to the Digital Switzerland Conference, what is your goal, and what do you want to accomplish? Why do you think that digitization is important to the Swiss people?

Held every other year. Discuss focus topics. AI, digital city. Putting people first. Easy said, hard to do. Tech drives everything (companies). People follow this. Look at things a different way. Wanted to include younger people. Don't have processes with this group usually. Usually only organizations. Know what those groups think because they are vocal. More difficult to hear from the other groups of people. Show interest in some of the projects developed over the years

    a. Do you plan in the future to expand these Projects?

Yes, looking into it still. Don't yet have a good way to do this. Criticized because the students were mostly the "elite" from urban areas. No farmers. This was to form the background to build off of. Months of preparation for this.

b. Have an idea on how to take input and implement?

Will influence the next strategy in a way. Way to Start the dialogue

9. During the Digital Switzerland Conference, do you think the public responded most positively to lectures, group discussions or seminars/workshops?

2800 invitations. 940 people registered. Free. Have data on attendance. Asked people what they liked/ disliked. Liked Floridi talk the most for the most part. Explain complicated things in a good and interesting way. Also liked the young people segment. Floridi 5/5. Young people 4.5/5

a. Done this for all the conferences?

Yes, this year was done better though. The type of discussion that people like the most depends on the person that is speaking. Choose the people based on the research they do that they think will be the best/ most entertaining

10. Is there a specific audience for the Digital Switzerland Conference, and what type of people usually attend?

a. Do you market the conference to high schools and colleges, or is it mostly businesses related to tech and their employees?

On invitation. Logistical reasons because it is free. Mostly addressed to decision makers and opinion makers. 20% civil society. 13% academia. 29% industry. The rest was administration. Good spread of the people that attended. Tried to increase the number of women that attended. ⅓ attendance. French, german, italian speaking people. Dont market because the tickets are not sold. Academia are mostly teaching staff, some students that came with them. Open call on social media as well. Increased young people. Dont address high schools and colleges specifically. Make sure there is a variety of backgrounds of the people that attend. All sorts of issues

b. Is it necessary to do more? You yourself or other organizations on the technologies?

It is never enough. Depends what you want them to know about. Cyber security and attacks, need more. Questions can become very technical and boring. People lose interest. Hard to convince smaller enterprises to look into cyber risk. Only looked after the big corporations for a while. Not the smaller ones, not in focus. This all needs to change. Can't just be one effort, needs to be continuous. Constant effort. Demands lots of resources. Can only do this to a certain extent. Always need to work with other groups of people. Willing to work with other groups because of limitations

c. Any opinion on breaking it down so its less technical? Any forms of events or ways to inform people that are easier to understand?

Swiss digital day: Way to reach out to people and show them what is there. Depends on who your counterpart is. Different forms of communications. Have a comic about a family, on the website. Another way that people can learn about topics. Way of showing how people live and react to situations. On instagram and youtube. Young people respond positively. This leads back to parents/ families

d. Active part in Digital Day?

She personally wasn't. Director took part in a round table. More of a consumer.

Appendix G: Jonas Nakonz Interview

11/09/2019

General Questions

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   *Can't say for sure, general idea: mystical topic for most people at least aware of it and it's coming. People don't really have a good idea of the scale and where it will affect things. Often associated with fears: job displacement, automatio*n.

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   Swiss cognitive launching cognitive valley with this direct purpose. (Luca is leading this initiative). Reach think tank, digital switzerland. Swiss Digital Initiative focused on governance of AI.

3. Do you think the Swiss population need to be more informed on AI and its applications?

   Yes. One perspective to strengthen marketplace, second (possibly more important) is the ethical standpoint, consumers understanding the technology and what is happening with their data. People involved without even knowing it (web data, etc.).

   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         N/A

   b. How does AI ask for additional involvement from the public?

      Peoples involvement depends on the actual application. AI linked with aspects of people's everyday life, awareness and involvement of the people in design could make things better. Algorithmic bias biggest danger, can

bias against minority groups (against women in hiring tools, black people in criminal databases, etc.)

c. Should the public have a say in how AI applications are designed?
    i. If so, for which aspects and how could that be realized?

N/A

Prompting Questions:

1. What fears do you have about the implementation of AI technologies when inclusion is not involved in the creation and implementation of the tech?

Algorithmic process.

a. *As long as it affects people we should have more participating in general.Inclusion has different meanings:*
    i. *Level of algorithms and data behind it*
    ii. *Supply side market*
        1. *Aspect of inclusiveness: more data pools*
    iii. *Consumer side*
        1. *Consumers don't have power on their data*
        2. *Strengthening consumers hand in the connection*
b. *The more information you have/data the more powerful you are*
c. *US/China: AI superpowers*
    i. *Power imbalance that may increase through AI*
    ii. *But there are pledges and "commitments" with the help of AI for undeveloped countries*
    iii. *So, technology can go either way*
d. *How to get inclusive outcomes if the norms are not inclusive*

2. In your piece on inclusion in AI, labelling AI products and lifelong learning were both mentioned. Would you happen to know if either of these methods have been put into place in any manner since this publication?
    a. What their results may have been?

Not sure about labeling/ Lifelong learning is more effective

    i. *Countries like Korea/Singapore that establish learning programs on AI for public*
    ii. *They all have the right to attend classes/ online and offline*

3. We found the labelling AI products idea especially interesting, as through our current research it seems much of the public is not aware that lots of basic AI technology currently surrounds them within everyday technology.
    a. Why do you think it is important to label this tech and have the people know they are utilizing AI technologies?

        Disclaimer: the piece reflects views of authors/ not really "their" proposals

        a. Raises awareness that something is at work
        b. Also, shouldn't just be labeled (transparency) but also choice on how their data is used and standard technology to process data
            i. Example: fairness standards
                1. Consumers should have the choice on what their notion of fairness is
        c. Transparency is what they have, choice is what they get
        d. Cookies: something that they get but just click away and don't realize consciously

4. According to data on your AI inclusion project it was stated 11 workshops were hosted across 8 different countries, with 10 organizations and 120 individuals participating. As a group that is trying to find the best ways to reach and include the public on the AI conversation, how did you achieve such a broad reach for this project?
    a. How did you advertise this project and get people involved?

        All about partnership for networks

        a. Main partners: Swissnex network (global)/ Open think tank network (europena trying to get global)
        b. Helped reach out to swiss and eurpean stations

5. According to the policy kitchen website, participation of anyone and everyone is encouraged. Do you know what portion of these participants in the AI inclusion project were more on the side of being individually involved in the project? In other words, participants that were not already affiliated with a technical or political organization that was a part of the project.

    People involved had access to invitation links or on a list of people to invite at their office

    a. Had diversity with background and seniority
    b. Difficult for actor to reach out to the furthest corner of society and get things known

6. In your work with Foraus, how do you feel that foreign policy on AI may affect the Swiss public's experience with AI and how they learn about it?

   9th of October there will be a release of a report with message of we don't need to change anything. Create good university and peace and everything is fine. Domestically: looks like government isn't trying to do anything. But, Geneva actors are working hard around the topic.

   i. *Obvious disparage between approaches*

7. How does your knowledge on AI and need for education of the Swiss public differ from other countries?
   a. Did you encounter that certain methods worked better in different countries?
   b. Which and why do you expect to work well in Switzerland?

      N/A

8. Do you feel that it would be beneficial for more of the general public to get involved in groups such as the policy kitchen, especially when coming up with ideas on the regulation and implementation of technical topics such as AI?

   Foreign policy aspect is that technology diplomacy is relatively neutral under radar and away from in your face political aspect of geopolicy. Don't know how that reflects public opinion.

9. How would you transfer the learning from these workshops to the corresponding decision makers to ultimately consider the inputs and have an impact?

   Stakeholder event (geneva) and media event

   a. *ITU ad others are in geneva so they have access to communities*
   b. *Hope that partners will pass on information*

10. What do you think would be some effective ways to better involve and interest more of the general public in initiatives such as these?

    Planning on health data focus/ Use policy kitchen as a method with a more scenario planning approach/ Less of the technical stuff. Trying more playful/inspiring inputs

    a. *Policy Kitchens (networks)approach is the right one cause its brings people in the same room and interact.*
    b. *Weaving social networks with actual people that are fun (almost a form of peace building) and connecting that with an online presence*

Appendix H: Marc Holitscher Interview

12/09/2019

General:

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   No, I don't think so. That's something we see across the board. There is a certain disconnect between what the industry does. That's an action item I see for us is to communicate the risks and opportunities that can take place on a well informed fact basis. When it comes to new technology, the impulse is to react negatively. People either don't understand it, read about it the press. That leads to an overall kind of atmosphere on the more critical side than the positive side. It should at least be neutral. We are good second movers. We very seldomly adopt new stuff first. We watch it elsewhere and then we jump on the bandwagon.

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   There has been an inflation. There are several initiatives that aim to achieve that. There are some different impacts. SATW has done a number of conferences. They start to articulate the risks and opportunities and also to inform. The people that participate are people that have an interest anyways. There are different levels of quality but not a broad dialogue. The biggest challenge I see is that policy makers don't really understand AI. It is super difficult to get them to the right level of awareness. Microsoft has a regular event in bern at the bank to aim politicians to get people in the public sector place to get people to learn about it. People can realise how important this public discourse is. In the political space there is absolutely nothing that drives this kind of conversation. There is a digital council that are hand picked (ceos of swiss companies, google) they have a closed circle where things like this are discussed. However, this is not transparent and not accessible from the outside. The department of innovation that has commissioned this AI study with the AI is another stream but it isn't something that has spillover

effect in to the public. For me, to generate awareness it is important to start at a political level. They really need to understand what the impact could be.

3. Expand more on what is currently being done or something new?

   We should always do both. There is this thing called digital switzerland which is a group of swiss companies with the goal of educating on the broader public on technologies. They have shown "mixed results". It could be going better. That is my job, to translate…..(MEMO)

4. Do you think the Swiss population need to be more informed on AI and its applications?
   a. If so, should existing activities be expanded or are new approaches required?
      - If so, which?
      - How does AI ask for additional involvement from the public?

        NA

5. Should the public have a say in how AI applications are designed?

   Yes, this is core. Because if people will only use technology they trust, you will never ever adopt something or trust in an algorithm that decides what kind of treatment you get when you are ill. Especially with how it's designed. Microsoft fundamentally believes AI must be human centric. It is here to augment humans. TO be more efficient. It needs a principled approach. This is what we propagate. We should not make the same mistake we have done in the environmental cone\text. We didn't even think of the consequences but only now do we see the mistakes that we have made. With AI we have the great opportunity to somehow reverse that and then agree on some fundamental instincts. And then implement AI along those lines. To agree on these there is definitely a multistakeholder approach needed. When it comes to bias and etc there needs civil intervention. If they don't trust the tech they won't use it.

   a. If so, for which aspects and how could that be realized?

What can we do in switzerland? One suggestion was to introduce a technological department at the political level where they only look at new techs. What I think is that we need in Switzerland is to join forces. We have a bunch of small groups that are all doing their own thing. This is typically swiss but we need a big group where they provide understandable and fact based on whether or not it's a good or bad thing. You must be open to things like AI. One example where this does work quite well is the governance forum. They found a way to combine the two approaches with public and private partnership. It's a difficult thing. But there switzerland is a heterogeneous group so this could be a good blueprint. We need to get AI on the radar of political people who can help form a public opinion leading to some actions items.

Prompting Questions:

1. When trying to communicate different types of technology to people who may not already have a lot of knowledge about it, what are some of the difficulties that you typically have to face and overcome? How do you overcome these difficulties?

   Two weeks ago, at event where participants are wealthy and old. Discussion about cyber security, sounds easy to find a good way to explain things in simple terms, but is hard. Need to reduce complexity. Takes a deep technical understanding, the context of the audience, and communicate the info easily. All about finding the right language, use a lot of examples. Keep doing again and again. Has been doing for 8 years and still see people who don't know what things are. Ex, the cloud. Still need to explain what it is. Technikfolgenabschätzung

   a. Being in the private sector how would you tell policy makers to do these things, can people come together

      About two things. The security and well being. Focus not so much on how to make companies more efficient, but rather the intersection of the different topics. Field of study where they exclusively focus on how technology impacts social structures. Politicians could benefit from taking a look at this field. The awareness of the politicians is important for this as well. Switzerland is in a good situation. Surplus of money, not a large social gap, good life. Advantage and curse, why change when things are

going well. This is what people don't understand. In fields such as AI, you may be left behind if you do not act on it now. More data is better. The longer we wait to make this data accessible, to make an agreement with the EU on how to collaborate, Switzerland is cut out of the data pools which is a disadvantage. Lack of awareness of this.

2. How does the business to client process work in regard to AI?
    a. What are the most common questions and issues that arise in taking technology from business to client?

Where is the data, who has access to it, how to get it, what to do with it. All about security and compliance on the commercial aspect. Microsoft has focused on this a lot. Contract that they only do what the customer agrees with the daata. Established methodology on how to show the customer what they do with the data and what happens to it. Transparency. What do you get out of applying AI in customer relations. How to do better business by applying AI to different processes. What are the advantages of the technologies, and what are the risks. If risks are less than benefits, do it. Ethical questions are coming up a lot more now. Came up with insurance recently. The awareness for the risk analysis is increasing. If they do something wrong, hiit on reputation. What are the design principles for applying AI, and how do you operationalize it. How do you make sure that the principles are applied, rather than just said. How to ensure they are actually in place.

3. How can AI play a more in depth roll in business? What about Business Planning?

New article (he'll share) about this. How to enfuse in business. This is a top down subject. The board has to agree on what is acceptable, define the norms and principles about it. Microsoft has a committee for this. If something may have negative impacts, it goes through this committee and is discussed. Look for bias and misrepresentation. After it goes through this board, decide if it will be implemented or not. This requires a lot of change to fully implement.

4. What are the ethical concerns that the private sector typically face while implementing technologies like AI?

The muse of data in regards to consumer privacy. Privacy rules are not followed, data is shared or combined. Profiling customers. Data may not be used in the way

that was said and agreed to. Risk. Need risk assessment. If someone finds out this is a valid challenge. This is the customers data so this is important to consider. Is management aware that if these things go wrong, then it could harm the company. Big tech companies are very exposed because of recent issues. If this is how consumers see the products, they won't buy and this is important. Need to make sure that this considered.

5. In a typical day, what does your work with technology usually consist of and look like?

   He spends his time talking with customers explaining and educating them about the potentials of technologies. Example: Talk to banks about the use of the cloud. Need to focus on this, and use of AI is important in this. Goes to a lot of conferences and key notes. Talk about the complex issues so that people are informed and can make decisions. In the news there is a lot of semi-knowledge that is not fact based. People worried about loosing jobs. Focus on upscaling and rescaling, shuffling around the labor market. He is a translation machine. Translate what's happening on the technical side of things and communicate this to the customer. Make it make sense with people.

6. Is there anything else you would like to let us know for this project?

   Point of joining forces is super important. So many initiatives already, as well as money. Should bring all of this together so that there is a common platform. Perhaps have different levels for the people with different understandings and desire for understanding. This is a social mission. Mission for the future good of society. This is important. This is one of the most relevant endeavors that we've had for the past couple years. People need to be informed so that decisions can be made or there will be an issue. He looks at what other countries do. All the countries near Switzerland have an AI strategy group. Have commission that talk about aI and its impacts on society. Should be on the top of the political agenda, but should be aware of the risks. We need to have a platform and public discourse. In Switzerland, we need to join forces, we need to educate the political parties. They are the drivers of public discourse. There will be conflict in this, but the dialogue needs to happen. How to rach enough support to reach critical mass. Can't be fragmented like it is today, need to connect.

Appendix I: Philipp Burkard Interview

12/09/2019

General Questions:

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   AI Broad subject. People are not aware of what AI is and what consists. People hear things about it, more than they expect

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   MINT (mathematics, informatics, natural, technical): Looks for people to work there. Google in Zurich hires people , but not specific to AI

3. Do you think the Swiss population need to be more informed on AI and its applications?
   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         N/A

   b. How does AI ask for additional involvement from the public?

      N/A

   c. Should the public have a say in how AI applications are designed?
      i. If so, for which aspects and how could that be realized?

      Yes, definitely an issue. Ethical Q/ Changes our society/ work. Switzerland is a direct democracy. Votes on these issues, f.e: Should a new Uni be built somewhere and parliament gives out money for science. People should have a voice for these decisions. Science is more and more important in our society. But also society should be more and more important for science. Not a one way communication from science to the public. AI is only good if it helps society. Ways to increase dialogue:

      - *Schools for young people.*
      - *Mass media plays an important role: Broadcasting, TV, Newspapers.*
      - *Special Projects: SATW, High schools, Tech Ladies.*

      Needs to be a dialogue, not presentations or conferences. Sciences need to hear out the public too. 95% of communication in this field is scientists

explaining to the public. SATW: world cafe: workshop that tries to get a discussion. Small project.

Prompting Questions:

1. In your own words, how would you describe what responsibilities you have as Head of Science et Cité?

   Director of the foundation. Not a large company, 10 people in Bern. Branches in Lausanne and Lugano. Small but a big network! Works to manage this foundation. Want to launch new projects and find money to find them. Overviews multiple projects, not one specifically.

2. Do you think that AI plays a role in the work that you do and the projects that you are a part of?
   a. If yes, what are some of the projects/ work that you do that relates to AI?

      Until now it wasn't a specific subject. More about digitalization in general. Focus on AI will increase in the future and become more important. Maybe in the future.

3. What sort of projects has Science et Cité done to try and increase the dialogue about all of the work that you do?
   a. What are some of the most effective ways that you have found of informing the public and increasing interest?

      Foundation is 20 years old. Projects in the website. In early years, a lot about science festivals. After that, Universities sort of adopted the festivals themselves, so they moved on from this specific focus F.e:
      - *Work on the Science Cafe. Not about presentation and longs talks. More about people asking questions and having discussions.*
      - *Have hackathons, which are participatory workshops.*
      - *Citizens Science: people are involved in the process of research. They help to collect the data, or the research question is developed with the people.*
      - *Projects on social media as well. Not just about informing the public, more about making a discussion about it.*

      Most effective way is a difficult question. Either you reach everyone and do not go in depth, or you focus on a smaller group and can really go into detail about the

topic. The most effective approach depends on what you want. In the end you have to use a little bit of both approaches.

4. What specific topics have you found that people are most interested in?
    a. How does age group and interest correlate usually? Are there specific things that older ages are more interested or younger ages and vice versa?

        The topics that affect them, such as health. Things that everyone is concerned about. Politics, environment. Some topics aren't important because they involve everyday life, but because they are important. Probably a distinction between what age groups have special interest in the different topics. Doesn't know any specific studies. In his own work, old people more interested in health, whereas as young people are interested in environment and digitization.

5. How do you ensure a nation-wide coverage and how do you handle the different requirements and needs in the various regions of Switzerland?
    a. Is it an issue, or not?

        Switzerland has many different languages and cultures. There are slight differences in the approaches, not big differences. Environment more important in Swiss German part, not so much the Italian. There is a big difference between the people in cities and rural areas. Highly educated people in the cities. More traditional population in the rural areas, may be farther away from science and universities. This difference has been an issue in the past. Vote multiple times a year on questions, and there is a gap or difference between cities and rural areas. Even with AI, in cities people are more informed than those in rural areas. Makes a lot of sense to go to these rural areas (mountains) to target the communication, because there is already work in the cities and they are already informed. This is a much bigger challenge however. It is easier to stay in the cities and focus there.Have to stay in the middle between being trusting and too skeptical.

Important to define goals/two way back and forth between speaker and audience

Appendix J: Luca Brunner Interview

13/09/2019

General Questions

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   No, which is why they launched cognitive valley. Focused on the threat and not possibility.

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   Federal Administry of Communication/ State Secretary of research SAIE/ Platform in Geneva: ethical form in AI (chair is former federal chancellor) aims to make people more away of ethical challenges of AI.

3. Do you think the Swiss population need to be more informed on AI and its applications?

   Yes, definitely. Doesn't see potential of AI without strong knowledge in population. People need to be aware of threats and possibilities. Awareness on topic and then get excited. Otherwise its black and white. Examples:
   -Public Transport: Testing applications to use public transport easily.
   -Diagnostics in Health Care: A lot of talk and development/ Clinics testing tools/
   -Problem is privacy issues
   -Education: More efficient by using AI. Tailoring to specific needs of students. - Schools and online courses.

   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         Problem is that we need to join forces to make it happen. A lot of early stage but not doing as well and then add new ones to make it work. So, yes and no. New efforts needed but also use what's already there.

   b. How does AI ask for additional involvement from the public?

One of the most disruptive technologies, so it will change people's lives. AI will change the job market which people really care about. Make people less afraid of technology and more empower them. Biggest threat is that small amount of people know about what technology is, but they can also misuse it. The more people talk the better it will be.

c. Should the public have a say in how AI applications are designed?
    i. If so, for which aspects and how could that be realized?

Ideally yes, but doesn't see it happening right now. Can't see people talking about the development of AI. Can't join discussion cause it's too abstract.

Prompting Questions:

1. In your own words, how would you describe what responsibilities you have as Managing Director at Cognitive Valley.

To moderate dialogue among members of the organization. Make sure interdisciplinary projects happen. Make sure different groups in company work together tightly and run smoothly. Finding the right partners to work with to gain visibility.

2. In our research it seems one of the big challenges Cognitive Valley aims to face is representing and educating people on AI accurately, in contrast to the often overhyped viewpoint many have.
    a. Do you think this excess hype around AI could be detrimental to its development and acceptance, and if so how?

Terribly overhyped, people do not believe in the power of AI since it's constantly referenced and thrown around inaccurately. Talking about it a lot and not informing people on the details can make people feel even more disconnected. Hype influenced by tech bubble and critical side of it focusing on robotics (replacing humans). CV aims at pointing out how AI can complement human minds rather than replacing them.

3. Given your background in journalism, communications and public relations, have you found what you believe to be any particularly effective methods to communicate with people about and inform people on technical topics such as artificial intelligence?

a. If so, why do you think people are most receptive to these mediums?

Efficient to make it visual, info videos, podcasts, anything to get it out more and keep people engaged. Another possibility would be to start with a specific use case (i.e. how does AI affect your daily life?) then broaden once people are already interested. Show small cases where these things affect the people, make it real, not abstract.

4. Do you think it is important for the general public to be knowledgeable of or be involved in AI's use in business/industry? Or do you believe AI use within society and the general public can be totally separate from AI's use in industry?

It actually could be beneficial for people to understand AI's uses in business. If people know benefits AI has in business it can provide job opportunities for those humans. Important for business sector to work on AI applications that are beneficial to not only themselves. Dangerous if applications of AI are not discussed as being both beneficial and also potentially harmful (ex. Used by state to get information on the people and invade privacy).

Appendix K: Anonymous Manager Interview

13/09/2019

General:

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   No, they are may be even misinformed because of the press not understanding artificial intelligence in general. People jump to the extreme examples of AI. Either AI is too stupid and can't do anything or AI can do everything in case of general AI. Both are completely wrong.

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   None. I am not aware of an objective national initiative. There are various private organizations, but they do have their own goal which sometimes even add to the confusions.

3. Do you think the Swiss population need to be more informed on AI and its applications?

   Switzerland is well positioned looking at the experts for machine learning and deep learning we have - compared to the country's size. However, the general Swiss population should be better informed about the disruption AI will have and the chances that it opens.

   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         It should be heavily expanded. Starting from initiatives with parliament, to government to public population. Always involving different stakeholders from academia, industry and vendors.

   b. How does AI ask for additional involvement from the public?

People should be heavily expanded. Starting from initiatives with parliament, to government to public population. Always involving different stakeholders from academia, industry and vendors.

c. Should the public have a say in how AI applications are designed?

Not sure. If a company is making an algorithm, the public does not need to be involved. However, when training it with data, maybe. It should be made sure that the quality of the data is relevant for the problem that is solved.

Prompting Questions:

1. In your own words, how would you describe the work that you and your company do?
    a. In what ways does AI relate specifically to the work that you do?
    b. What techniques do you use to explain?

Day to day work involves trying to explain the technology to the public. There is a misconception that he is trying to correct. Many different types of technology that are a part of everyday life involve AI, need to make people aware.

2. What work do you do to increase the exposure that AI has in the public, if any, and how effective would you say this work is?

People need to understand that AI is a probabilistic technology. If you show AI a picture, then it will try to tell you what it is with a percentage of confidence. This is completely different than how things have been in the past using programmed algorithms. As time will progress, AI will become better than humans at various tasks, which is called superhuman capability. You must find where you want to apply the technology if computers are better than humans. In these cases, computers should do this task. AI is allowing humans to focus on things that they are better at. We should use AI to augment humans. People aren't aware that AI

is already widely used everywhere. Once you start giving people examples, they can start seeing other applications. By doing this, you can correct the extreme opinions that people have about AI.

3. What are some of the issues and concerns that come with AI, either in general or for society, and how should these things be addressed?
    a. What do you personally think are the greatest concerns?

Ethical Concerns? How to handle

- *More of a question is where AI should be implemented and used. This is however more ethical question that should be addressed by people in ethics – not in technology*.

4. What benefits do you think that AI could have if implemented more into society, and what steps could be taken to help make this happen?

Use AI as a tool rather than replacing humans. Make jobs easier and more efficient

5. In your experience, how do people respond to the idea of AI being further implemented into everyday life? Is their reaction typically positive or negative?

The implementation of AI into society depends on the situation and varies from country to country depending on politics.

- *This is especially important for Switzerland. As people get older, you need to ensure that they are taken care of. Self-driving cars could be useful for this. Same for other robots that help take care of/ serve people. Even tracking people to look after people.*

- *Politics must be educated. So far, they are influenced negatively by the media.*

a. What would you want to say to the policy makers?
    - *We have the experts, but we do not have yet eco-system for them to work to be successful. Politics has to provide this.*
    - *The more you teach them what is possible with AI, the more you can think independently and see where else AI could be used.*

Additional Comments:

1. *Two things to educate*
    a. *We need to educate the government in a broader sense. There are good AI initiatives but they are not visible. Need to educate them more.*
    b. *We need to educate people early on in school systems about what changes would mean to them. We need people to realize that it's based on statistics, it's never 100% true. Need to make sure people realize that as AI advances it doesn't mean no jobs. Rather, people will be educated in other areas and specialize in different jobs and use AI.*
    c. *For the press, we should stop the polarization. Ex: robot vs AI being stupid/ not as smart as a child. People try to say that a child can see a ball once and recognize it, whereas AI can't always, so it's not as smart. This is not true. These analogies are wrong..*
    d. *A child spends a lot of time learning things about the world, and then they are good at recognizing and thinking and making decisions. If you did the same thing with AI then it would be the same. Can't truly compare the two.*
    e. *Discuss more about how AI can be used as a tool to help people.*
2. *What more should we know*
    a. *Switzerland needs to take a position now, not wait. Other countries are investing on AI and doing work, and Switzerland isn't. We need to start doing this and not fall behind. Not much would have to change because we have the technology, but we don't. We need to take a position and do something. The swiss should use their strong position to take a stance and do something. Need to embrace these technologies now rather than wait. SATW is one of the organizations that can do this.*
    b. *Focus on politics, populations, and education.*
3. *What does your organization do about it?*
    a. *70-80% of projects involve AI. When training neural networks for example, you need to feed it a lot of data and have it process it. In this field, they provide a*

platform to train and use AI and neural networks. Their technology is used in all other companies' applications of AI. more behind the scenes.

4. *How to communicate tech to clients?*
    a. *He is on the computer science side. Speaks to both business and engineers. Have the deep learning institute where they teach people (managers) what the technology is and where it can be used. Teach the engineers about new technologies so that they can understand it. Can then think about the projects on their own. Can help clients.*
5. *Humans have bias, does AI have this as well? Feeding AI data that contains humans bias produces bias?*
    a. *Valid discussion and concern. However, humans are biased as well. You can teach AI whatever you want, so it's up to humans to teach them what they want. This will differ based on who teaches the AI.*
    b. *It is hard to try and remove this inherent bias, even when trying to avoid it. AI only knows what you teach it, so you must fix the world to fix the AI.*
    c. *Bias is a concern, but it can be overrated. Sometimes relevant, sometimes not. Can't always be too focused on this because it doesn't always matter. Must look at whether or not the bias is important or not to the matter. It will always be biased.*
6. *When AI is being used, you should tell people. Maybe have an option to turn AI off, although lose a lot of functionality.*
7. *World Economic Forum*
    a. *Need to educate top managers in Switzerland*
    b. *They talk about AI but don't necessarily know what it is*
    c. *Insurance, when self-driving cars become a big thing, the needs of insurance change.*
8. *See how we can educate the top managers. Anonymous knows most of the projects in Switzerland. He pays attention to the press.*

Appendix L: Toni Wafler Interview

23/09/2019

General Questions:

1. In your opinion, is the Swiss population well-informed on AI and its applications?

   No

2. What initiatives do you know about which aim to inform and sensitize the Swiss population on AI?

   Unaware of any initiatives that focus on people in general

3. Do you think the Swiss population need to be more informed on AI and its applications?

   Informing people more accurately. Overhype is bad, but kind of gone now. Thin line between overregulation and under-regulation, people need to be involved in that discussion because due to CH's democracy. Data protection, digital sovereignty, people need to know if their data is being used and by who, more of a conversation about it. Find a way to allow for the benefits of tech while hindering misuse, regulation and discussion. Help the losers so that AI is not hindered overall

   a. If so, should existing activities be expanded or are new approaches required?
      i. If so, which?

         N/A

   b. How does AI ask for additional involvement from the public?

N/A

c. Should the public have a say in how AI applications are designed?
    i. If so, for which aspects and how could that be realized?

N/A

Prompting Questions:

4. In your opinion what do you feel the Swiss public's feelings are towards AI? Positive, negative, somewhere in between? Given your background in psychology, why do you think it is that people have formed this opinion.

    It was overhyped some months ago and people became a little bit afraid. This has gone away, so it's not so much in the public awareness anymore. People do not really think about it. I think people should be exposed to AI as much as possible but in the right way. Not in the SciFi kind of way, but as the real kind. I do not think we have to keep it clandestine. We should be a little bit more relaxed about this. Beyond that, education is important.

5. Given your background in psychology what do you think are some effective methods to get more of the general public interested in learning about AI and getting more people involved in the dialogue on AI's use. In other words how do you think people want to be approached on AI topics.

    This isn't a psychological question. This more of a question about raising public awareness. Open discussion forums, Universities, etc. However on the high level they're working on a digital strategy. First we need a good strategy from the gov and then we need to invent ways of implementing this strategy.
    In our research we found that you have worked/completed research into human-machine interaction, can you explain a little bit about your work or what that means.

6. In an ideal scenario what do you think Human-AI interaction should look like?

    We are designing work from a psych view. What is a good work where employees can develop their will to do good? How can we design more? When we design new technology it's not just engineering. People also have to work along side

your tech. We work with engineers to make sure people can be with it. For example, engineers expect drivers in an automatic driver car the "driver" will be attentive to the car. However, the human will not pay attention if they do not have anything to do (fatigue theory). Automation creates processes for humans. We try to make good performances from a psychological point. The human has to have some way to contribute to the success of the process.

7. What safety/human concerns do we need to take into account when creating and implementing new forms of AI into society?

   Just talked to a swiss pilot. He said some years ago he had to care about the navigation. Now they're concerned they may not understand what their plane is doing. You must remain aware of facilities. You certainly need a human to understand the machine. Sometimes pilots have to take over and manually fly but pilots aren't always trained for it. Right now there are some AI based suggestions on what to do with money. But how can you trust a machine? I need to look in to someone's eyes to trust them. It shouldn't just be a group keeping up the knowledge. It's not the AI taking over for humans but they must collaborate. Together they always perform better than one without the others. The doctors will need to be even more educated than now to perform the tool with AI. The AI allows you to verify your higher knowledge. In switzerland we really have one asset; the human brain. We should not replace the brain (our only asset) but we should augment the brain. The AI should make the brain more powerful. Some places we're talking about the capabilities of the human brain. With AI as a tool we might enlarge our limits. When we replace the human brain the jobs will leave switzerland. Maybe we should teach all students to program AI.

8. In your work with change management and the digitalisation of the workplace, what do you think some of the biggest obstacles are/will be for people to properly adjust to the increased implementation of AI technologies in the workplace and in general?How can the issue of job security be tackled as the workplace is continually digitized and AI is increasingly implemented?

   This brings me back to psych theory that there is a resistance/acceptance of change that is related to the feeling of having control of what is happening. When people lose control people start to resist. If a human feels kicked around they will start to resist. If there's too many people who think they are losers in developments then they start to elect new people who promise them what they want to hear. Either we should design the process of integrating AI so they do not feel overpowered by the process but rather like they are surfing on the wave (as

opposed to a tsunami). People might not be able to get in control, for this we need a really good political terms.
Work design, sociotechnical work design important psychological concept to consider. People and machines need to work together in specific ways to engage people and be most productive working with AI.

Need to learn to cooperate between engineers and technical workers with social science workers, engineers want control want to work with logical things, need to learn to be more relaxed and not need control over everything.

Appendix M: Tabulation of General Interview Questions' Responses

Interviewee	Is the population informed?	What is the opinion?	Should the Swiss be involved in decision making for AI?
UZH Professor	No	Stigmatized, not great	Yes, all things that affect day to day
Sabine Brenner	Can definitely be further informed	People concerned about what is going to happen to them.	Ambiguous, they will influence the next strategy, start the dialogue
Philip Burkard	Unaware of what consists, they hear more things than they expect about it	The topics that affect them, such as health. Things that everyone is concerned about: politics, environment	Yes, definitely, ethical questions/ changes our society/ work
Anonymous Manager	No	Opinions are not accurate	Yes, only politically driven issues
Jonas Nakonz	Can't say for sure, likely no	"Mystical" topic	Yes, especially when related to their lives
Luca Brunner	No	Fear	Ideally yes, not possible now.
Marc Holitscher	No	Not fully understanding	Yes, particularly for social services
Toni Wafler	No	People do not really think about AI	If relevant to their lives, though it would be difficult

Appendix N: Additional Education Background

While interesting, we deemed this background research not immediately pertinent to the rest of the paper so it has been moved to this appendix and may be referenced if looking for more information on teaching.

To understand the benefits of different educational methods, we first examine the different kinds of learners. There are several types of learners, and creating seminars or other teaching strategies that account for all of them can be very useful for teaching a wider range of people. According to Honey (2009), it has been proven that using and understanding learning styles can improve comprehension and engagement. The three most commonly defined styles are "visual"," kinesthetic" and "assimilator". Visual learners require images and other visual stimulation to engage them. With this knowledge, simply integrating these into the teaching platform being used can engage this type of learner. This is also true for kinesthetic learners, although this is somewhat more complicated. Kinesthetic learners learn best when they are able to work with their hands or to make something happen. A cause and effect that is triggered by the learner maximizes the learning for this type of person. Assimilators work best with abstract ideas. For this learner, it is better to know how something is built. In the case of AI, this could be learning how each individual code set is written leading to the larger whole.

Most teaching methods fall into two categories; one being a teacher-centered approach and the other being a student-centered approach (Rossier, 2019). These methods can be implemented with both experienced adult learners and younger learners. In teacher based

approaches there is direct instruction from the teacher. This can be equated directly to a lecture style teaching session. The teacher is assumed to be the expert and the authority, and the students must take it upon themselves to learn to reach associated benchmarks, for example exams or other assessments. In relation to our study, the associated benchmark would be any improvement in the general public's knowledge of AI.

For student-based approaches, the teacher is typically a facilitator and a personal model is used (Rossier, 2019). A personal model relies on students' initiative to learn and to work with their peers. There is a peer delegator assigned by the students in this cooperative style of learning, while the students work together to learn and use the teacher as a reference.

There are high tech ways of teaching that involve tablets and laptops. This style is particularly accepted by students who have physical disabilities (Rossier, 2019). These disabilities can range from visual impairments to motor impairments. On the contrary, there are also low tech teaching methods that cater to lower budget programs. These can also be particularly advantageous for students who are kinesthetic learners. For example, students who learn better with more unconventional ways of learning and who are less likely to be able to sit still for long periods of time will benefit from lower tech teaching. This way also encompasses the "learning by doing" approach, which showcases hands-on experiences. An example would be the difference between learning how an electric circuit board works by reading about it as opposed to putting one together and accomplishing a task.

There are other examples of teacher and student-based learning. Kinesthetic learning would be placed more in the teacher centered style (Rossier, 2019), but it is lower tech. Direct instruction is closest to low tech and is purely teacher directed. Differentiated instruction allows

students to be in charge of learning but has the students take more initiative. At one end of student-led and high-tech approaches are personalized learning and game-based learning.

Important roles to consider in teaching are that of a formal authority, an expert, and teachers who perform with the personal model (Rossier, 2019). A formal authority is seen as a powerful person, who has student's respect through knowledge and status. This classroom focuses on rules and discipline. An expert led classroom involves students being led as direct learners and they are considered to have only one goal to learn from the expert.

A personal model has teachers lead by acting how they would like their students to act, and this allows students to best understand material (Rossier, 2019). The students can watch the teacher and replicate what the teacher is doing. The key differences between teacher-centered and student-centered styles is the passive vs. active learning. When a student is passively learning something by being taught in a conventional way, they are shown to forget details at a faster rate, whereas when they learn in a more interactive way it is more likely for them to retain the information longer.

Flipped classrooms explore topics in depth and operate through the use of technology (Rossier, 2019). The teacher watches the students watch already recorded lectures and answers questions. The teacher can also guide students through a set of digital questions on the subject. This is a good mix between active and passive learning, but it has its disadvantages for those who cannot afford or access these kinds of technology. One benefit is this form allows students to work according to what they can handle. This is still, however, decided by a teacher on how they should learn and therefore may lack some key aspects for unique learners.

Differentiated instruction focuses on each individual student. This isn't cost-efficient nor is it time efficient, but it can be necessary for those with learning disabilities (Rossier, 2019).

Inquiry based learning is more a student-based learning approach (Grasha, 1994). It focuses on three roles. These roles are facilitator, personal example and delegator. Facilitators are those who chose to put emphasis on the relationship between the student and the teacher. This works best with open classrooms and teachers aren't considered the expert. Both student and teacher learn alongside each other. The delegator is known as a resource, which answers questions when students need the guidance. The delegator assists with conflict and typically has studied the content before. The delegator focuses on "autonomy". In this method, students are told they should ask questions. The result of this learning strategy is assessed through presentations or reports instead of exams. This model closely works with expeditionary learning (Rossier, 2019), which is the higher tech version of the former.

Game-based learning involves memory games or video games that work with the information the student needs to be learning (Rossier, 2019). Students can work at their own pace, and the learning is focused on the student. However, this is not an effective teaching method when implemented on its own.