

# Group assignment module 2

## About us

Our group consists of three members, who are doing masters in Design. Suresh Sapkota , Maren Søby Fosser and Tina Steinstø. Suresh and Maren are just new to master and started this autumn, and Tina is writing her master thesis already about NAV's use of chatbots. We have all done our bachelors here at lfi.

## Area of interest

### *Impact of AI on people's everyday lives*

We want to research how artificial intelligence impacts people's lives. We have a lot of products on the market these days that claim to have AI, for example virtual assistants or robotic lawn mowers. Our question is whether they make our lives easier or not, as often advertised, or if they create new problems we have to overcome.

## Background

Verne and Bratteteig (2018) wonders in their article whether AI will make PD (participatory design) obsolete. They conclude that PD is not obsolete because of AI, but that AI poses challenges to a PD process because it is a technology that changes unpredictably over time (Verne & Bratteteig, 2018). We find this interesting in connection to our area of interest because if AI changes in an unpredictable way in a design process, then it stands to reason it does this when it is in use too. An ever changing technology that will continue to develop as it gets more information about its user might get new roles in how it affects people's daily lives and its role in these.

Another article that shows how the user knowledge of how this works affect the expectations the user have regarding how to communicate with the agent is 'Will You Accept an Imperfect AI?'. This study shows among other things how things like false positives and false negatives is interpreted by the user. Too many false positives can lead to unwanted requests leading to frustration and too many false negatives can lead to the AI missing requests. Another important

fact shown in this study is that if the user contributes to the system it is also more accepting of mistakes. (Kocielnik,2019)

There has not been done much research on conversational agent used for the purposes that we would like to explore. There has been done other studies, however, like conversational agents that work as a museum guide. A paper from 2005 describes how the CA 'Max' guides visitors at a museum, in addition to participating in small talk. (Kopp, 2005) Another study shows problems that arised with a CA that were designed to give information about train tables in The Netherland. (Sturm ,1999) But how these CA's work in everyday settings outside of these restricted places and specific contexts has not been a focus in HCI-research, and we would therefore like to explore this further.

The research has shown many reports of failures in AI design, where some are just embarrassing and others are harmful, causing serious damage in people's life. This shows how designers and developers are struggling in creating effective AI. We think, reflecting on the 18 guidelines as discussed in "Guidelines for Human-AI Interaction" will help to have a better understanding on Impact of AI on people's everyday lives. We assume that this article helps to minimize unexpected changes with a consistent interface and unpredictable behaviour shown by AI.

## Questions

### 1) *How does artificial intelligence impact people's everyday lives?*

With this question we would like to understand in what way AI is incorporated in people's lives. Whether it helps them do tasks or for other purposes, and how this is done. We would also like to know how AI has changed the way these tasks were done before. In addition, it is relevant to understand if AI still has a future in people's life, and how its role will evolve.

Some robots require additional work done by the users, like for example the vacuum cleaner Roomba that requires that the user tidy up and make it easy for the robot to

move around the room (Forlizzi, 2006). How do these additional tasks affect how the user interacts and how does tasks change because of the use of AI?

To seek information about this question, we would like to talk to users of AI by doing interviews.

## 2) *How does people's expectations of AI affect how they interact with AI?*

There has been conducted several studies about how user expectations can affect how the users interact. Often there is a gap between user expectation and system operation because of the users mental model and lack of feedback that can affect the interaction (Luger, 2016). Some users will have too high expectations of what AI can do or expect something different from what the AI has been programmed to. How does this affect the use of AI?

According to Hectht (2018), in developing new technologies it is important to take the public's view into consideration. People are often worried about the safety, and the research shows that people are not totally satisfied with the AI they are using today. *"The public's view of artificial intelligence may not be accurate, but that doesn't mean that those developing new technologies can afford to ignore it (Jeff Hectht, 2018)".*

## Methods

We would like to do a literature study because research has been done on these subjects before. Also, because some of what we want to know is speculation, we think it is important to see what other researchers predict about the future of AI. In addition, we think it would be beneficial to do interviews with users of AI systems to understand how they interact with them, how they use them and what they think about them.

To execute the interviews we have made an interview guide with some questions we think will be able to give us valuable information. The guide has some questions that are defined, but we aim to ask the interview objects to elaborate on their answers by asking follow-up questions. We will in other words conduct semi-structured interviews.

## Findings

### Interviews

We have chosen to conduct interviews to get new knowledge about how people use personal assistant technologies, and what their experience in using them is. We have chosen to do interviews because we think it can give interesting and new knowledge when compared to studies other researchers have done.

Because several of the research papers in this field is written in English speaking countries, we think it is also interesting to acquire knowledge from people that have a different cultural backgrounds and use these assistants in languages that are not the mother tongue of the developers behind the technology. By doing this, we can have a more interesting discussion when comparing literature and our own findings.

### **Interview objects**

We have chosen to interview people who use personal assistant technology. The reason behind this decision is that there is a lot of AI technology out there, and we need to narrow down our area of interest to be able to present interesting findings. We think people who use personal assistant technologies can give us valuable insight into how AI affect their lives, and it is also a relatively new technology that is interesting in regards to how people interact with AI.

Our interviewees were in different age groups, from 24-65, and had different backgrounds when it came to technology. The younger participants studied technology, but belonged to different areas of research, and the older participant had less of a technical background.

### **Use**

Our interviewees had different experiences with AI and the interviews we conducted gave us therefore insight into different ways of use. The people we interviewed had used Google Home, Google's assistant on phone and Siri. They used them for different purposes like setting alarms and searching for things, like they do in a 'traditional' Google search or finding directions. One

of the interviewees stated that she used it more for fun than for specific purposes. None of our interviewees used their personal assistant for very meaningful or important tasks.

### **Expectations**

The students in technology searched for what Siri or Google Assistant could do and when new functions became available they started exploring. They had not thought about all the functions the technology could have and there seemed to be several functions they did not know about.

When the students started using personal assistants they thought the assistant would be more capable of doing things than they were. The older interviewee started using the personal assistant out of curiosity and to explore the new technology.

### **Benefits**

The participants gave us different answers when it came to whether or not the personal assistant was effective in use for them. The older participant experienced that often it would be faster to type than talk, because the assistant misunderstood her a lot. One of the younger interviewees on the other hand thought the opposite.

### **Challenges**

All the interviewees had problems being understood by their assistants, but the female, older interviewee more so than the males. She had little trust in Siri when it came to being able to do tasks efficiently.

They all experienced that words they said were misunderstood by their personal assistants, and that they would get wrong results based on this. In some cases it was also necessary to be very specific, but not in an intuitive way. The older participant explained, for example, that to check the weather in Haukeli she had to ask about Haukeli Fjell (Haukeli mountain) to be able to get the right results.

One of the interviewees had problems with false positives, where his Google assistant would start in the classroom when it thought someone said "Hey Google". He also experienced that when he actually wanted to start a dialogue that Google did not respond every time, and required more than one try.

One of the students said that they liked using the assistant in the beginning, but could never get used to talking to a phone especially in public.

### **Future use**

All the interviewees stated they wanted to continue using their personal assistants, and expressed a prediction in that the technology will become more useful in the future. One of the younger participants said he thought that with Internet of Things, personal assistants would probably be a lot more integrated in our daily lives than at the moment.

### Literature study

User expectations can be a source of many challenges. A study from 2019 shows how the users mental model will affect how they expect the system to react and what they expect the system to be capable of. Without knowledge about the limits of the system and how it works it is difficult to make accurate judgments about a systems capability. When a system did not do what the user thought it should be capable of doing the user would end up with abandoning the task. Lack of feedback regarding how the system worked was therefore an issue. The users with more knowledge of computer science, however, would try again in a different way. As the users learned to use their conversational agent they relied more on keywords and shortened their sentences because they understood more of how the system interpreted what they said. Bridging the gap between the users mental model and the system's capabilities is therefore important.(Luger, 2019) To bridge this gap system feedback and how the CA is designed, is important. We would like to further explore how feedback is interpreted based on the mental model the user have and how this can be improved for a better user experience. In our study we will therefore focus on exploring further how expectations affect the interaction and uses of the CA.

Although the developers have followed the guidelines provided by Collisson & Teevan 2019, the findings from the interview shows that users are still experiencing problems such as; accent(pronunciation) of different person. Systems may behave differently from user to user (Guidelines for Human-AI Interaction). As from the interview, one interviewee said that she thinks Siri does not understand you everytime and it is more time consuming to use Siri, while the other said you can find certain things quicker and it is much faster than typing by hand.

This shows guideline 2 “make clear how well the system can do what it can do”, is clearly violated. (Amershi 2019)

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## Appendix 1

### **Interview guide**

What kind of AI assistant do you use?

How long have you been using your personal assistant?

How often do you use your personal assistant?

Have you used similar technologies before?

What were your initial expectations of your personal assistant?

What were you planning to use it for? Do you use it for this purpose now?

Can you tell me something about your experience in using this assistant?

-any bad experience you have regretted using AI?

What do you use AI for? (tasks?)

Do you think <insert AI name here> does this task efficiently?

Do you want to keep using this AI?

How do you think this personal assistant will evolve in the next years? (What new functions/tasks will it be able to do?)



## Appendix 2

### **Chatbot module 1**

#### Chatbot assignment

##### **About the process?**

We started by finding an idea, and we chose to imagine we would make a chatbot for a company, Visit Oslo. We used their website as inspiration for what a user might want to know more about, and take inspiration from their information flow.

We had an iterative process where we tested the chatbot and went back to make some changes before we tested the chatbot again.

##### **What did we learn?**

We learnt that designing a conversation required a lot of effort, and we had to make very different decisions on how the user interacted with our bot in comparison to how we normally design user interactions. The bot was not as smart as we thought with the keywords, so we had to write more than we initially thought necessary.

Because of the type of interaction, it was difficult to predict what a user might think faced with the questions the chatbot asked. We saw, chatting with our bot, that we forgot what we expected the user to respond, and noticed some questions would probably seem very ambiguous for a first-time user. We tried instead to make the bot come with suggestions on what kind of input the user might ask, to nudge them in the right direction or give inspiration.

## Appendix 3

### **Chatbot module 2**

Chatbot design task : Reflections about making changes to the program

At first we tried to read through the code to understand it. We found it a bit difficult to understand every aspect of the code. When we tried to make changes, we got an error message, but we realised after a while that we had forgotten to upload the file. As we had not used the program before so it took some time to figure out how to fix this error.

When we understood how to make changes we tried first to change the 'dense' part of the code. The purpose of this was to try to change the accuracy, but we had some issues when we tried to change this. We also tried to change the input text and max words. The result of changing max words was that we got more numbers displayed on the screen.

We struggled a bit with the program and it did not work every time we tried to run the code. Even though we had some challenges while implementing changes it was interesting to see how the changes we tried to make affected the program, but it would probably be easier to make changes if we knew more about how the different parts of the code worked.