

UiO : Universitetet i Oslo

IN5620 - Interaction with AI

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Interim report

Fatima Ehsan - fatimane@uio.no

Marte Nilsen Holdø - martenho@uio.no

Rameen Khan - rameenk@uio.no

Synne Gåseidnes Thorsen - synnegth@uio.no

Group description

Our group consists of Fatima, Marte, Rameen and Synne, who are all first year masters students with the Informatics program: design, use, interaction. All except one of the members, who got their bachelors in 'applied computer technology' from OsloMet, did their bachelors degree from UiO with the same study program.

Area of interest

Artificial intelligence is such a big research area with many interesting aspects to explore. Initially we were thinking of working with themes such as 'bias in AI' or 'misuse of AI in mass surveillance' as they are broad areas with lots of research to back it up already. For instance, in an article from Harvard it's discussed how there is a lower accuracy on use of face recognition across demographics: "A growing body of research exposes divergent error rates across demographic groups, with the poorest accuracy consistently found in subjects who are female, Black, and 18-30 years old." (Najibi, 2020).

However, we found that these kinds of themes, especially AI in mass surveillance, might become too "dark" and focus a lot on the negative aspects of AI, whereas we wanted to keep it more lighthearted and focus on the more favorable parts of AI. As one of the group members had attended an AI-driven exhibition at Teknisk Museum we thought it would be interesting to make this a base for our project and look more into how use of AI may be used to improve museum experiences. This type of artificial intelligence is used for creativity, learning and entertainment purposes as opposed to the more serious and ethical sides of AI discussed over. To build on this motive, we found an article about AI's potential to positively impact the effectiveness and efficiency of museums and their response to the developing visitor needs and expectations (French & Villaespesa, 2019). They write about how there's countless ways of including artificial intelligence in museum experiences and we wanted to explore whether this particular exhibition at Teknisk Museum have chosen an approach that lives up to the expectations of both the organizers and the visitors.

Background

In regards to museum experiences as noted by Dal Falco & Vassos (2017): "Studies show increased visitor interest in interacting with the artifacts in an original and participatory manner (Solima, 2012), notably by exploiting the functions offered by new digital media". It

becomes clear that digital interactive museum experiences are on the rise, as well as an important measure to shine a spotlight on important inventions of our time.

Granier (2013, as noted by Dal Falco & Vassos (2017)) suggests "'le musé polymorphe', an innovative model that embraces new ways to transfer knowledge and stands as a living organism, adjusting to the evolution of social needs". Therefore, museums can be viewed as a continuously changing institution that should adapt to the current time and be a reflection of the contemporary. One could then argue that a museum like the Teknisk museum has a duty to enlighten their visitors on the current state of technology, such as artificial intelligence, because this is a reflection of our current time period.

The Norwegian "Teknisk museum" has since the start of this year shown an exhibition that incorporates artificial intelligence. It is this exhibition that is the basis of our research and project. Through the exhibition the visitor uses a 'identification stick' to navigate between different screens that display information on the history of technology. In short - when the visitor first takes on the exhibition they answer some questions, resulting in an AI-generated course guiding them through the exhibition with the 'identification stick'. For more information about the specifics of the exhibition look here:
https://www.tekniskmuseum.no/ikt

Before we took on the project to investigate this exhibition further we also took into consideration the different design guidelines proposed by Amsershi et al. (2019). The 4th guideline suggests: *Show contextually relevant information. Display information relevant to the user's current task and environment*. This is one aspect that we will look further into and which we address in our problem area.

Problem area

In the initial problem area definition we asked whether artificial intelligence can give either a better or worse museum experience and/or if use of AI in museums can contribute to inclusion of the diversity. We assumed that the point of using AI in this exhibition was to give visitors better experiences, but we wanted to examine more in depth how people experienced

the AI designing museum experiences tailored to each individual; what kind of impressions and expectations do they go into the exhibition with and are they the same when they leave?

The defined problem area didn't quite fit all what we wanted to research in this project as the question of whether AI can give either a better or worse museum experience often can be answered in a simple yes or no. Hence, we needed to broaden our scope and make the problem area more open to reflections and discussions. After getting some feedback from course supervisors, we ended up with the questions:

"How can artificial intelligence be used to improve museum experiences?"

"In what ways does/doesn't the Teknisk museum succeed in using artificial intelligence in their exhibition 'I/O'?"

Method & Approach

For this type of research we figured an exploratory approach would be needed as … (legg med kilde som viser til utforskende tilnærming)

We ended up with three different methods. We started with a service safari. A service safari is an investigation method that aims to understand how a service works. Our focus area was the AI-exhibition in the museum. All group members went out into the field and gathered insight into how the exhibition is experienced. We chose this method because we thought that we could also be considered as users (visitors) of this exhibition.

We then contacted an employee of the museum, who could give us access to interview a few people who visited the exhibition. We used this qualitative method to better understand the experience from the user's point of view, and how the exhibition is perceived by each individual and see which needs have been missed. When we got the go-ahead from the employee, we returned to the museum to interview potential participants. The group of four split into two. We stood on each side of the exhibition to interview people. We asked short, standardized questions to the participants who took part in the unstructured interview.

Our third method was field observations. Here, we wanted to investigate how the users carry out the indicated steps in the exhibition, and how they go through it.

Findings

From service safari:

Our experience of the exhibition went well. We found the concept easy to understand, and it gave us an interesting experience, but we were a bit disappointed by the content. We were expecting a much more interactive experience, but after the AI had calculated a route for each of us, the rest of the experience involved reading about different types of technologies and searching for the next post. We found the routes we got to be just fine, but struggled with understanding the logic behind who got which route, as the AI-process of making it was based on quite random tasks that we had to do that did not feel particularly relevant. Outside the tailored route there were a few interesting and more interactive things to look at. However, we experienced that we got too caught up in the route to notice these at first.

From user interviews and field observations:

We ended up talking to 8-10 visitors. It was difficult to follow their journey through the exhibition without physically following them, so to avoid making anyone uncomfortable we decided to keep the process organic. We interviewed some visitors beforehand, about their expectations and knowledge, and some after having completed the route, about how they experienced it, what they liked and disliked and so on.. We only interviewed 2 participants both before and after.

We observed that a lot of the visitors did not grab a stick at the beginning of the exhibition, and walked through it on their own, choosing their own path based on their interests. This could be because they did not understand the concept, or because they simply did not want to use the stick. By talking to a few participants, our overall impression was that most of them did not understand what it was that they were supposed to do. Some found it poorly communicated. Only half of the people we talked to actually did what was intended, with the stick. Once we informed them, some responded that they would have liked to carry out the exhibition as it was meant to be done.

Many of the visitors we talked to had little to no knowledge of the exhibition of AI beforehand. But a few had some knowledge. A few of the visitors we talked to did not know what AI was.

The overall feedback was positive, however. A family we talked to expected that the adults got a route with information about older technologies, and the children got a route with information about newer technologies. After finishing the route they found it exciting to see that they got different routes from the others, and to see that they got a similar route if they have similar interests. Some experienced nostalgia from looking at the older technology.

The AI-designed routes were not that interesting for the children. Some of the visitors thought that the exhibition could have been more interactive. This lines up with our reflections from the service safari. The parts that were interactive were more suitable for children, and a lot of participants brought their children.

A wish from one participant was to get a route that was more in line with their interests. The exhibition only contained information about technology. To enjoy this exhibition you have to have a certain degree of interest in technology and its history, but if you do have this interest, the AI of this exhibition gave an overall positive experience.

Further work

What we want to do next is explore the technical aspects of the exhibition; what kind of technologies that goes into building such a recommendation system and what kind of decisions the developers must take while developing this. In addition, we are looking into how we can use the user data collected from the museum and propose better solutions, for instance an improved version of the stick or how one can better inform the visitors about what the AI in the exhibition is capable of.

References

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