

Diploma program autumn 2017
Eskild Storm Sundt-Hansen
Interaction design and product design

Robotics as aid within welfare

Mosse Sjaastad

Main supervisor
Førsteamanuensis, institutt for design

Place and date: _____ Signature: _____

Rachel K. B. Troye

Prorektor, AHO
Instituttleder, institutt for design

Place and date: _____ Signature: _____

The diploma program will clarify goals, aspirations and expectations of process and results. The program should not anticipate design solutions or lock on to just one focus area, as this is something I hope to be able to consider before the start of the semester. The finished diploma program will act as a template for a good design process and as a communication tool for the more holistic view of the task. In addition, the program can be used to verify the result.

Main supervisor

Mosse Sjaastad

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Mosse will be my main supervisor focusing on interaction.

Assistant supervisor

Steinar Killi

Professor, institutt for design
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Steinar will be my supervisor within product design.

Contact / Collaborator

Egil Utheim

Mektron / Hepro
egil.utheim@mektron.no

Egil Utheim is an entrepreneur and manager of Mektron. In addition, he runs a number of other collaborative projects aimed at innovation in the health sector.

In this project, I will combine interaction design with product design.

Hepro and Mektron

Hepro is a Norwegian company that have great experience producing products within wealth-fare. They bought Mektron in 2016. Mektron has its field of speciality within electronics, such as robotics.

This diploma assignment is in collaboration with Mektron and deals primarily with welfare technology with robot as aid. My contact person in Mektron, Egil Utheim has for several years been working on the development of a robot shower. This is intended as an aid for the disabled and for persons in rehabilitation. Egil wants to help elderly and other disabled people to more easily handle personal hygiene on their own. His goal is to get more disabled to master the most intimate part of the shower sequence on its own with the help of a robotic arm. In addition to improve dignity, another gain is that the person stays active and self-functioning over a longer period.

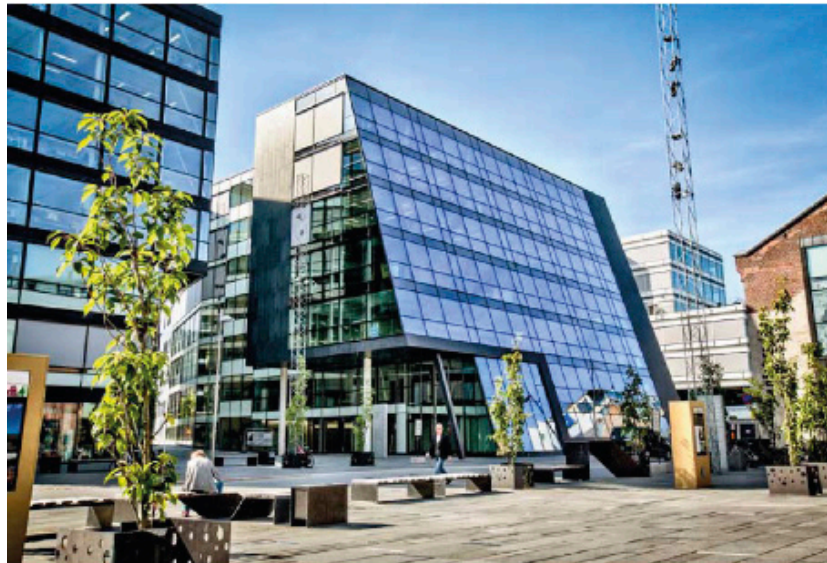
A lot of good work has already been done. I would therefore like to acquire as much insight into the exemplary work as possible from Egil Utheim as well as Sinan Softic, at the start of the project. Sinan is a former student at AHO, he did his diploma in collaboration with Egil Utheim, also focusing on the shower sequence.



MEKTRON

ROBOTIKK

Mektron has offices in Drammen, and it is crucial that I am at scene for the benefit of their technical expertise in addition to a regular contact with users.



Kontorlokaler til Mektron
Papirbredden i Drammen

The context is initially at a nursing home / hospital for stroke patients, but in addition, it is a long-term plan to increase the scope for installation in private homes. Mektron already has a collaboration with student nurses and stroke patients as test users.



Sykepleierutdanningen i Drammen er
en aktuell samarbeidspartner

Innovation with value

I see a great value in this concept, especially in postponing patients' need to "give up". Research shows that when a person must accept being helped with personal hygiene, it also means that they let go being independent in general. If we can facilitate for them to manage the shower situation, they will most likely be self-sufficient for a longer time as well. This is a question of dignity as well as resources.



Motivation

It is very exciting and inspiring to participate in a pioneering project with innovation that I consider of great value and importance. I also have the impression that Mektron with Egil Utheim is very receptive to the value of the design profession adding such a process.

Earlier school projects with Mektron

This robot shower was also the starting point for a school project I did in the third semester, so I already have some knowledge of both product, users and related issues. At that time we solved the task with less attachment to the current robot than what I would like to do now. Equally, the findings around the involved users and their usage situations remain highly relevant.

Back in 2nd grade, we based our project on the concept on the ergonomic showerhead from the diploma by Sinan Softic. Sinan is currently working at Eggs and is involved in a process with Mektron to produce a prototype of the shower head from his master's thesis from 2013.

User focus

On a general basis, it is potentially challenging to make older users gain trust towards modern technology, and especially an industrial robot. Just because there are big differences between the user's relationships with technology and my own, I consider it very important to strive for user insights through close collaboration with patients and caretakers.

Through Mektron and Egil Utheim, I get direct access to users like healthcare professionals, patients, in addition to technology developers and other stakeholders within Health service.



The starting point

Contribution

I intend to be working on the robot's output in terms of how it moves, but also how it appears, how it responds to the outside world and what signals it sends to the users. This affects interaction design as well as product design.

Technical competence

Mektron possesses expertise and resources in technology development, and mainly for my part, resources for encoding the robot and its associated sensors. I believe I can contribute to gain insight into the user's needs and challenges. The experience of design work in close collaboration with technical engineers as well as entrepreneurs is something I really look forward to, and I expect to learn a lot from it.



Fields to look into in the research phase - I will choose the most relevant in time for the first midterm.

User testing

How can I contribute making the experience pleasant and trustworthy. Through **user testing and interviews** I hope to gain more insight regarding what issues are most pressing.

Appearance

I already know that the appearance is an issue for some, which is something that can be explored with different materials and perhaps slightly adjustments of the shape. But I will be careful spending much time on “styling”.

Trust is key

If you understand how it works or what it does, it is more likely you trust it. Colors, contrast, and directional shapes and form elements. This is something that will be connected with the prototyping of the robots actual movements.

Scenario

I want to look at the overall experience of the shower sequence. By sketching user sequences through observation and visualization of existing and potential usage sequences as well as routines, and in that way involving the users as much as possible.

Respectful approach with users

This is related to the above mentioned points and deals with a potential problem area. There are people in a vulnerable state put in a vulnerable situation, so a highly sensitive approach to the design of sensors (kind of cameras) and personal presence / observation can be of great importance to the benefit of the testing.

Process / methods

I will divide my process into three main phases, research, concept development, and finalizing delivery.

In the research phase I will bring in tools from service design as mapping and organizing workshops. I will conduct workshops with users and interviews with relevant specialists.

Other tools I might to use in this phase:

- Literature study
- 3B analysis
- Giga maps
- Observation
- Sequence visualisation
- Scenarios
- Workshops
- Video sketching
- Rapid prototyping (modelling)

Deliverables

I will present the progress of the project at first midterm and second midterm before the final presentation.

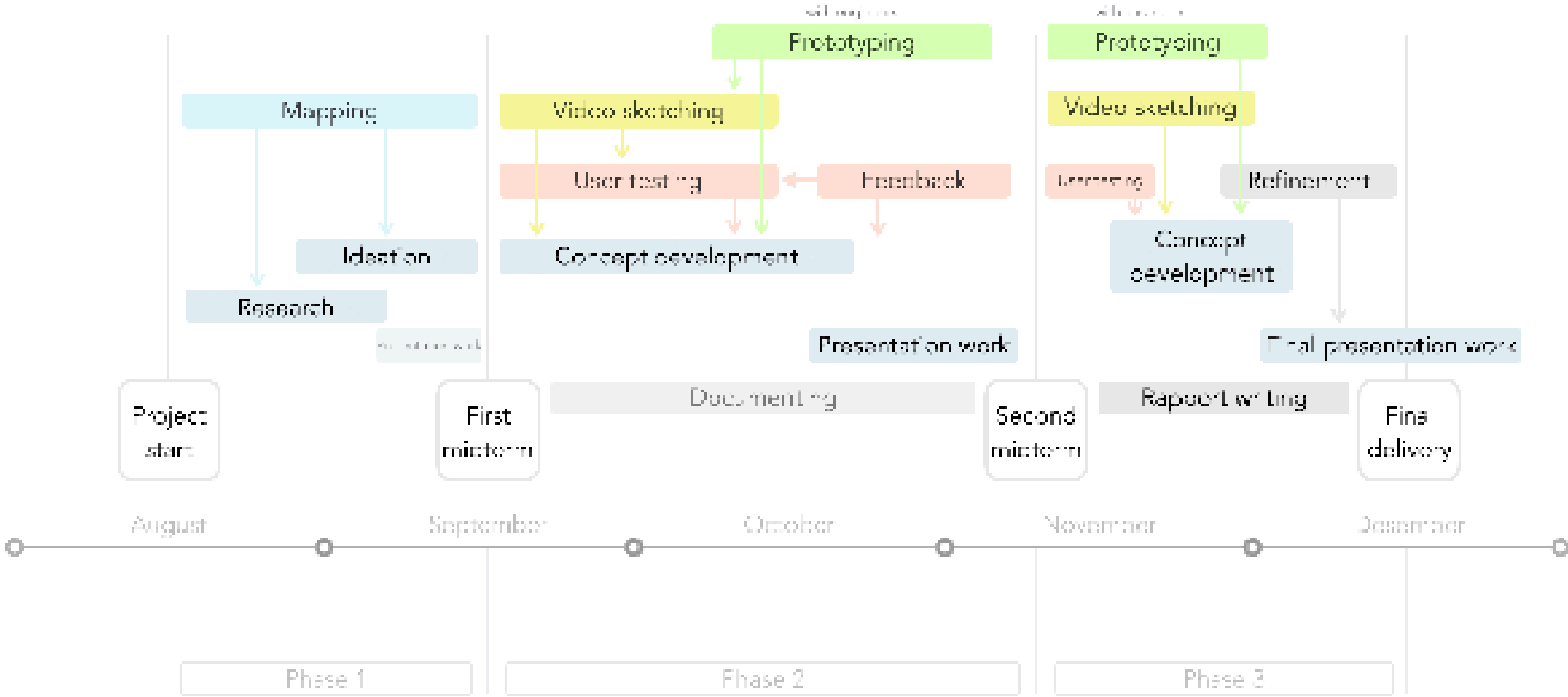
A design proposal will be presented at the second midterm.

For final diploma submission my delivery will consist of:

- Printed and/or digital Rapport
- A video and/or physical demonstration of prototype
- Final Presentation

There will be a Diploma Exhibition at The Oslo School of Architecture and Design featuring the result of this project.

Planned timeline



Goals

I hope to create enthusiasm and belief towards design thinking within welfare technology. And hopefully show in a good way, how design can be of great value in both the holistic and the more narrow approach.

Dare to do wrong

First of all I want to learn. And I believe that it is better to do the right thing wrong than the wrong thing right.'In that sense, though I will try, I am not demanding the perfect result, but a perfect try. This being a school project makes it a great opportunity for trying.