PhD Lecture

In partial fulfillment of the terms for obtaining the PhD degree, Michael Kvist Svangren will give a lecture on the following subject:

**Interaction in Digital Ecologies with Connected and Non-Connected Cars**

**on Friday 8th of November 2019, 13:00, in room 0.2.13 at Selma Lagerlöfs Vej 300**

**Abstract:**

Using technology in a car that supports driving, such as GPS and infotainment systems, is familiar to many people. However, a development in the characteristics of contemporary cars is that they can be used in combination with other interactive technologies that complement and extend car functionality beyond the driving experience. These combinations of interactive technology form what can be described as digital ecologies. However, unlike interaction with in-car technology, there is limited HCI research on people’s interaction in digital ecologies with cars and how these support everyday mobility.

This thesis investigates interaction in digital ecologies with cars. Towards this end, the thesis investigates two research questions. The first research question works on how to characterise how people interact in digital ecologies with cars. The second research question works on understanding activities that can be supported by digital ecologies with cars. The investigation of the research questions presents two main contributions of this thesis.

Firstly, the thesis contributes with a framework that characterises interaction in digital ecologies with cars. It does this by describing HCI research on the central characteristics of interaction with digital ecologies and interaction with cars. The framework is constructed with this as a foundation. The framework consists of two dimensions: the first dimension describes interaction in digital ecologies as either being simultaneous or sequential, and the second dimension describes how cars can be a part of digital ecologies as either being connected or non-connected through the internet and its services.

Secondly, the thesis contributes with five papers presenting empirical findings on how digital ecologies with cars are used to support mobility in everyday life. The papers investigate the cases of electric vehicles and shared cars. The empirical findings show that digital ecologies are used in a number of activities to support mobility in everyday life and using the constructed framework as a lens, it is possible to characterise how people interact with them. For instance, for electric vehicles using a digital ecology consisting of several devices is important to support complementing car functionality in activities such as charging and planning. For shared cars, collaborative interaction between people through online services is important for planning a ride. The results of this thesis further discuss implications for design. Opportunities and challenges are suggested as inspiration for where designers should focus their attention when designing for activities where digital ecologies can be used to support mobility.

The PhD project that this thesis is based on is partly financed by the DiCyPS research centre funded by Innovation Fund Denmark. The aim of the research centre is to use software and data of complex cyber-physical systems to develop smarter and user-friendly solutions that benefit individuals and society.

Members of the assessment committee are Associate Professor Ivan Aaen (Chairman), Aalborg University, Professor John Vines, Northumbria University, Newcastle, UK., and Associate Professor Andrés Lucero, Aalto University, Finland. Professor Mikael B. Skov and Professor
Jesper Kjeldskov are Michaels's supervisors. The moderator is Associate Professor Dimitrios Raptis.

All interested parties are welcome. After the defense the department will be hosting a small reception in cluster 5.