
Interaction in Dynamic Smart Environments

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Doctoral Seminar, Linz, 2006

Abstract

I'm still in the process of choosing a more focused research topic. The field I'm currently looking at is probably best described as HCI in smart environments (augmented reality, tangible interfaces, ambient displays) and context awareness (with a focus on localization). Other topics are mobile applications and mobile phones, with their increasing capabilities and wide availability.

Keywords

HCI, localization, augmented reality, tangible UI, ambient displays, mobile phones

Problem Statement and Research Question

With the disappearing of devices into the environment and their increasing heterogeneity, traditional WIMP-schema (Windows, Icons, Menus and Point Device) based interaction is no longer effective or feasible. The general research problem I would like to address is how an intuitive and effective interaction for some tasks in smart environments can look like.

Another interesting research area is given by the fact that there is already an abundance of information available online, but having access to the desired information in the "right" situation can be a real

challenge. Given the increasing capabilities and the high availability of mobile phones, there is a lot of potential in this field.

Approach and Methodology

In a first step, use cases and interaction requirements in certain smart environment settings should be identified. After a theoretical definition of interaction concepts, the fundamentals for experimental systems should be laid by building some basic software and hardware components. These components are then used in order to assemble prototypical systems. The quality of research will be validated and evaluated using these prototypical implementations in user studies.

I think this approach is appropriate, since ultimately it is only possible to evaluate how close we are to the set goal of an intuitive and natural interaction by including the key factor: humans. Another reason for this approach is the fact that technological capabilities are a major factor for the frame of possibilities in the field of HCI.

Conclusions and Future Steps

Future steps will include the exploration of interaction concepts using the above mentioned approach and the implementation of some prototypical applications based on mobile phones and on-site information access.

Additional experience would be required regarding user studies.