Karlsruhe Institute of Technology

INSTITUTE OF INFORMATION SYSTEMS AND MARKETING

Bachelor Thesis

Integrating Eye Tracking Technology in Mixed Reality Systems: State-of-the-Art Review and Integrated Theoretical Framework

Problem Description

Mixed reality (MR) technology brings together the real and the digital world. In MR, users have access to both physical and virtual items and can manipulate them. Such technology can support users from different perspectives depending on the task, context, and user characteristics. Researchers have used sensing technologies like eye tracking to investigate users' cognitive states and behaviour while working with MR systems. Having access to users' eye-movement data can be used offline to improve the design of MR systems or real-time to adapt MR towards dynamically. During the last years, researchers have used MR and eye tracking technology in combination in order to achieve different goals. Furthermore, the new HoloLens technology by Microsoft offers an exciting and powerful new input: Eye tracking! Although there is a great potential for using eye tracking technology, there is a lack of a theoretical framework to support researchers and practitioners in integrating this technology into mixed reality.

Goal of Thesis

- Investigate the current state of the art in the usage of eye tracking technology in mixed reality systems
- Develop a theoretical framework based on existing research
- Identify the research gaps in this field

Requirements

- Strong time management and communication skills
- Strong analytical skills
- Interest in cutting age technologies
- Good English skills

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Microsoft HoloLens

Eye-tracking Galsses Example:
Pupil-Labs