

Characterizing situational awareness of transport operators based on eye tracking

Problem description



More and more modern transport modalities are equipped with complex human-machine interfaces (HMI). HMI help to narrow the gap between complex automation system and their human operator. We see HMI in the traffic controllers' rooms, the ADAS-equipped vehicles, the public transport drivers' rooms, and many other modern transport modes. Engineers design all HMI to ensure high efficiency of data capturing and robustness of systems. However, it is unclear to what extent these systems can adequately support human operators. This master graduation project uses mobile eye tracking technology to characterize situation awareness, decision making, and task performance of operators and validate HMI designs in specific mobility applications. To address this challenge, this project will employ eye-tracking glasses to generate insights about operators' experience with HMI and translate these insights into advice about the ways to improve HMI designs.

Assignment

- Conduct a literature review of state-of-the-art techniques for the human-machine interface assessments
- Design and conduct an eye-tracking experiment with the Tobii 3 glasses regarding human-machine interface operation
- Analyze the data based on situation awareness theory regarding the effectiveness and usability of the human-machine interface and provide insights to improve the design of human-machine interface
- Writing a thesis report (and optionally a scientific paper for an international journal).
- This Master thesis includes an internship at Royal Haskoning DHV.

Research group

Transport & Planning

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Information

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