Interaction of a Cyclist with automated transport in Virtual Reality environment

Problem description

This proposed Master thesis topic is related to the SIPCAT project. SIPCAT stands for Safe Interaction of pedestrians with automated transport. Automated vehicles can contribute to sustainable and efficient transport. When driving slowly, cautiously and predictably, they could share the road and interact with vulnerable road users. Conducting real-life experiments is very expensive and might put the road users in real risk, and therefore, it is also unethical. In this project we study the traffic safety of this interaction within the 3D VR Digital Twin of the Marineterrein Amsterdam Living Lab (MALL). In this project you will study the interactions between cyclists and automated shuttles in a shared space area using the 3D VR Digital Twin that is developed within this project. Your task will include defining based on literature and discussions with relevant stakeholders the most important interaction scenarios to investigate, conduct the experiments with a sample of participants and draw conclusions regarding the safety and efficiency of these interactions. The VR digital Twin environment is developed by VRBase.

Assignment

- Review of the state-of-the-art on cyclists' interactions with automated vehicles and the use of VR environment as a research method;
- Experimental design and execution using VR environment. Different scenarios will need to be developed, taking into account AV driving behavior/style, external HMI, etc.;
- Analyzing cyclists' behavior, trust, and acceptance in these different scenarios;
- Writing a thesis report (and optionally a scientific paper for an international journal);

Research group

Transport & Planning

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Information

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