institute of media informatics

universität ulm

Vehicle Motion Simulation in Virtual Reality

Open Bachelor/Master Thesis

Background

A major challenge for assessing the effects of vehicle motion is to replicate the inertial forces and vehicle dynamics present in on-road driving. Driving simulators allow researchers to create safe and reproducible stimuli, thereby enabling rapid and safe empirical exploration. However, in-lab driving simulators are often static and cannot simulate motion, whereas high-fidelity simulators can replicate motion but are expensive and require high maintenance effort. A solution may be using a low-cost motorized wheelchair combined with a motion platform to simulate vehicle motion in virtual reality.

Research Goal

The aim of this thesis is to build a motion simulator in virtual reality based on a motorized wheelchair. A related work research should be conducted. A prototype based on already existing hardware should be designed and implemented. Finally, the defined hypothesis should be evaluated by conducting a study.

Based on bachelor/master level
the scope is adapted.

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Images:
https://www.youtube.com/watch?v=61MD3bv1qeQ
https://www.youtube.com/watch?v=TXhV1XOhvS8