Immersive Experiences: Unleashing the Power of Virtual Reality in Public Transport Choice Studies

Problem description

Understanding public transport passengers' decisions is crucial, especially in the context of promoting sustainability and encouraging the use of public transport. Stated preference surveys are commonly employed to study choices, particularly when new alternatives are introduced. However, these surveys often lack realism and may not accurately reflect passengers' true preferences and behaviours. Virtual reality (VR) emerges as a promising tool to address this limitation. By creating immersive and realistic environments, VR can provide a more authentic experience for studying public transport choices.

Assignment

Master thesis projects may involve one of the following topics:

- Exploring how different public transport elements impact passengers' satisfaction
- Stated choice between different public transportation modes, comparing results from traditional surveys and VR experiments
- Studying how people explore different alternatives until they make a decision, applying decision field theory
- Dealing with how to present static (e.g., cost) and dynamic (e.g., time) attributes in VR choice experiments

The tools available at the MXR Lab are virtual reality (VR) headsets, and physiological sensors (heart rate, eye tracking), among others.

Candidate

- Knowledge and interest in passenger behaviour
- Successfully completed the eXtended Reality for Civil Engineering course (CIEM6304) or have experience in VR
- Some experience in Python or R programming
- Willingness to further develop data analysis and modelling skills

Research group

Mobility in eXtended Reality (MXR) Lab and the Smart Public Transport Lab, Department of Transport & Planning
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The project will be performed in cooperation with Dr Jaime Soza-Parra, Utrecht University