Conference Poster

Visualizing Transport Futures
The potential of integrating procedural 3d modelling and traffic micro-simulation in Virtual Reality applications

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**Background**

Visualizations play an important role in transportation planning. To communicate plans and policies that affect public transport modes, some adding infrastructure, others restructure public transport systems, trade-offs for other transport modes, visualizations are often used in early stages to illustrate the impact of some project on traffic safety, mobility or social inclusion. They may, however, often be misleading in their impact on the perception of people's behavior and quality of living as they usually extract and simplify too many or too detailed infrastructure that does not exist today.

**VR in Transportation Planning**

So far, visualizations to communicate future system designs rely heavily on photos, maps, or simulations. Recent and ongoing technological developments in the field of Virtual Reality (VR) open new opportunities for visualization and scientific insights to help the user to understand the environment. What are the potential uses of Virtual Reality in transportation research and planning?

**Behavioural Experiments**

Walking and cycling is a multi-sensory experience which includes visual, auditory, somatosensory, olfactory and vestibular sensory stimulation. Conducting a survey to understand the perception of urban transportation needs based on place, context, and feel is not feasible. Virtual Reality (VR) has already established a methodological soundness of the field of cognitive psychology. Although there are generic differences such as VR, car interior design, and road user interface, there are no established standardized VR experiments have been successfully conducted in various fields of cognition.

**Stated Preference Survey**

The opening of new infrastructure can impact the opportunities for longitudinal studies to assess the traffic system's impact of such changes. However, these variations are often challenging and are not fully understood or measured. With VR experiments, we can incorporate the planning and modeling with perception and understanding in simulations.

**Communication and Public Engagement**

A common virtual reality application for architectural design and urban planning purposes is to model virtual environments for public engagement. However, these applications seldom expose the user to how the infrastructure has already been built. Recent advancements in computer graphics and immersive VR have enabled various opportunities to generate realistic 3D VR scenes that are suitable for better engagement.

**Driving Simulator**

During simulations, the user has been to use transportation research because the TVs are studied to develop behavior and sensory perception. In a recent virtual communication environment, the user can be transported to other environments or travel systems, allowing them to respond to unexpected situations. The user can navigate and allow new applications for research, for example to study the perception and numerical physiological reactions that differ from different urban traffic scenarios on crossroads.

**Conclusion and Outlook**

In any field of application, it is important to provide a detailed understanding of VR applications for transportation planning, their methodological soundness, and their impact. While VR is an additional tool, it is evident that existing limitations in this regard.

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