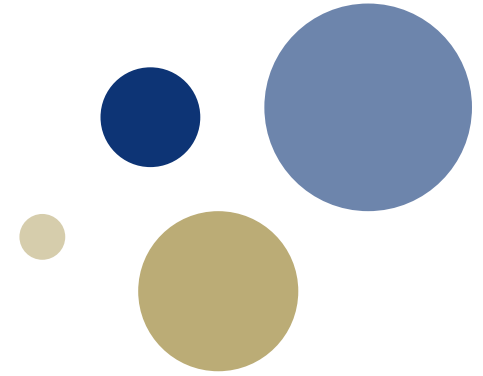




Norwegian University of
Science and Technology



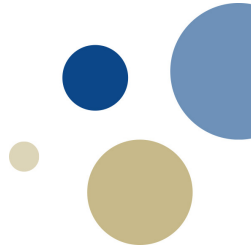
The applications of Virtual reality road traffic simulators as risk assessment method of future mobility concepts.

Researching of the design of human factors / traffic safety VR simulators

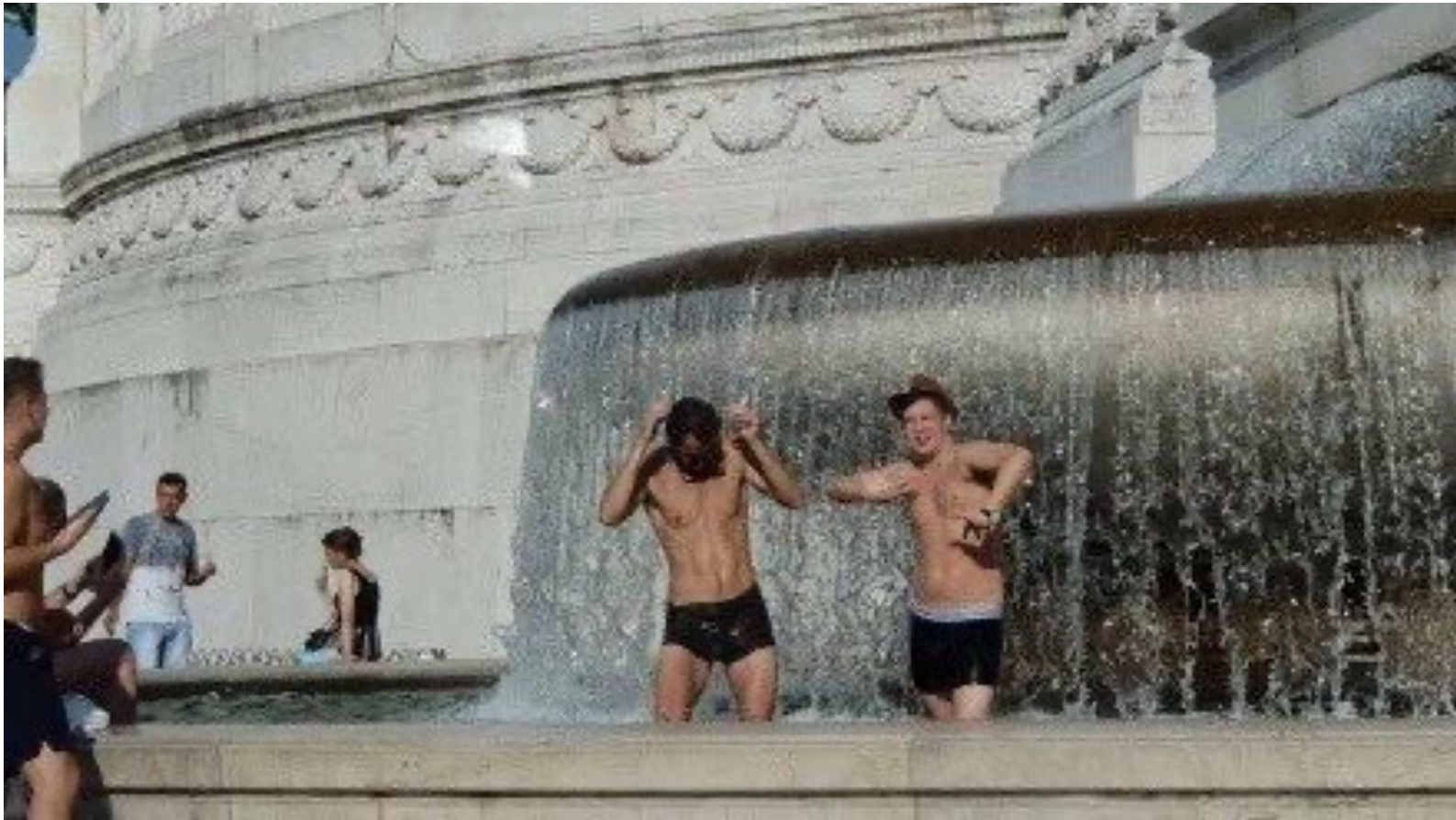
Baher Gunied

This research project

- Investigating the characteristics of an effective Virtual Reality simulator applied for human factors research.
- Simulator used to generate valid data of uncertain factors: traffic users safety behaviors and error creation.
- Replicating the impacting forces that influence human errors and risky behaviors in road traffic scenarios.
- Conducted in (low cost / high fidelity) virtual experience and safe lab environment.



The uncertainty of human behaviors in urban design projects



The fountain is an urban design problem that focus on how to design public spaces while considering the unpredictability of urban space users behaviors

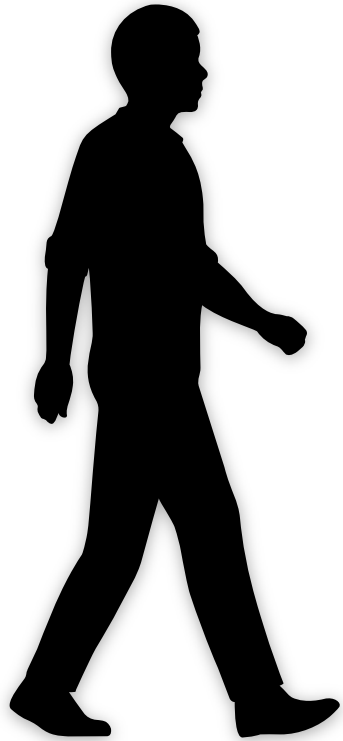
Failure risk of (high cost/ long term) infrastructure projects



Sweden, New safety infrastructure failed to make drivers slowing down before zebra lines.

Simulator hypothesizes

Traffic user

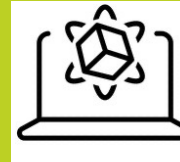


Individual factors

Human Error

Virtual Simulation Experience

Tasks
Interactions
Context



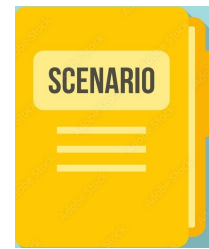
VR Experience



Virtual human



Digital twin



Scenario

Outcomes



VR Know how ?

Effectiveness

Human Error

Behavior



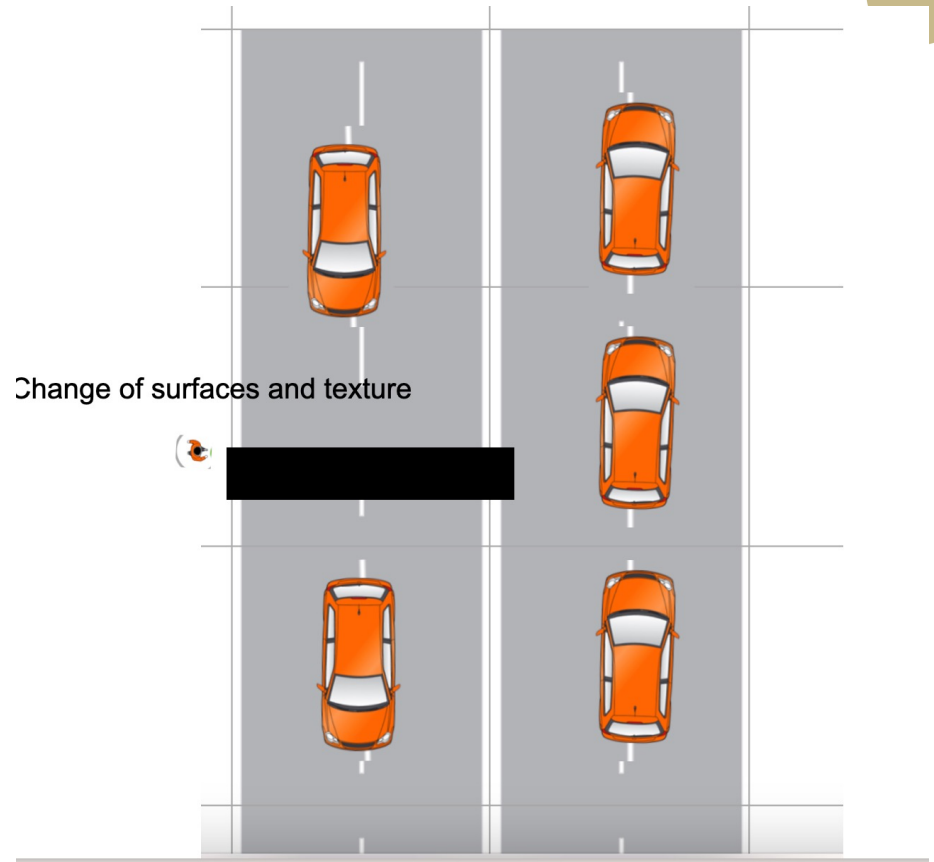
Virtual humans

Pedestrian simulator Case study 01

To investigate the Pedestrian crossing behavior with the absence of zebra Line.

Measure Impacting factors:

- The impacts of the gap between vehicles on the crossing behaviors.
- The Impact of alternative infrastructure to zebra line
 - 1.The change of texture
 - 2.Change of surface height
 - 3.Presence of median island



Milestones for the Pedestrian Simulator



■ Stage 01: Building Simulator (January 24- To the April 24)

1. Set up the layout simulator system.
2. Designed the Virtual Simulation experience.
3. Designed experiment for case study 01.

■ Stage 02 Conducting pedestrian experiments: April to June 2024

1. Developed and testing VR virtual experience
2. Conducted simulation experiment.

■ Results and outcomes:

1. Validating the impact of VR feature of the effectiveness of the simulator
2. Publishable results
3. Modeled Pedestrian behavior for simulation

Thank you

