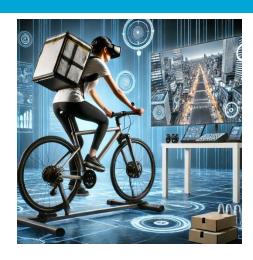# Using a Virtual Reality Bike Simulator to Study Delivery Riders Behaviour

Problem description

The urban environment presents unique challenges for delivery riders, including navigating dense traffic, adhering to tight delivery schedules, and maintaining safety. Currently, there is insufficient data on how delivery riders make real-time decisions in varied traffic conditions and little understanding of the factors influencing their behavior and safety on the road. Virtual reality (VR) offers an innovative way to study these behaviors in a controlled and safe environment. Using a VR bike simulator could provide insights into the decision-making processes of delivery riders without the risks and variables associated with real-world testing. This thesis aims to investigate how delivery riders react to different urban variables and adopt their cycling behavior using a VR bike simulator. This approach will allow for the examination of rider responses to various urban traffic scenarios, contributing valuable data that can influence urban planning, policy-making, and rider training programs. This master thesis will be part of the SINERGI project.

Assignment

• Review of the state-of-the-art VR bike simulator and its application in studying cyclist behavior

• Experimental design and execution of VR experiment using a developed VR bike simulator.

• Analyzing the decision-making process, stress level, and physical exertion of delivery rides.

• Writing a thesis report (and optionally a scientific paper for an international journal).

Candidate

• Willingness and openness to conducting experiments

• Familiarity with Python programming

• Successfully completed the eXtended Reality for Civil Engineering course (CIEM6304) or have experience in VR

Research group

Dr. Yan Feng, Mobility in eXtended Reality (MXR) Lab, Department of Transport & Planning, Y.Feng@tudelft.nl
Dr. Shadi Sharif Azadeh, Sustainable Urban Multi-modal Mobility (SUM) Lab, Department of Transport & Planning, S.SharifAzadeh@tudelft.nl