



Nudging car drivers towards safe and environmental car driving using sound assistance



Mobility in eXtended Reality



Problem

Safe traffic is important for all road users, and for society, since traffic accidents are very costly [1]. One of the main factors of (un)safe traffic is traffic behaviour, especially car drivers behaviour. Since cars are heavy and capable of reaching high speeds, their impact on “vulnerable road users”, as cyclists and pedestrians, can be severe [2]. Moreover, higher speeds, acceleration and wrong gear are not only risky but also environmentally unfriendly [3]. A well-known traffic safety technique involves gradually slowing down when there is a need to take reduce speed or come to a stop [4].

To reach a safe speed, the ISA (Intelligent Speed Assistance) system is obligatory in new cars [5], which uses auditory signals to inform drivers that they must reduce speed. However, this assistance method is not always appreciated by car drivers [6].

Objective

The aim of this master thesis project is to explore how auditory cues can assist car drivers in optimising their driving behaviour to enhance safety and environmentally friendly driving style. The research will investigate the effectiveness of sound in a VR driving simulator equipped with audio devices. Additionally, experts in acoustics and perception will be involved during the project.

Student profile

This project requires hands-on skills (setting up the driving simulator), python programming skills, and experimental skills. Knowledge or study into traffic safety, car driver behaviour, and sound perception are necessary.

Research group

The supervisory team will consist of:

Dr. Maria Salomons, Traffic Dynamics Modelling and Control lab, 23.HG 4.45,
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Dr. Yan Feng, Mobility in eXtended Reality lab, 23.HG 4.47, Y.Feng@tudelft.nl
 Depending on your master, additional members may be added.

Links

- [1] [Road crash costs - 1. What are the costs of road crashes for society? \(swov.nl\)](#)
- [2] [FS Speed.pdf \(swov.nl\)](#) SWOV Speed and speed management July 2021
- [3] [Why slower is better - CE Delft - EN](#)
- [4] [Driving Techniques: Reduce Your Carbon Footprint on the Road \(fleetsafetyinternational.com\)](#)
- [5] [Intelligent Speed Assistance \(ISA\) – ETSC](#)
- [6] [Ways to reduce the Noise of ISA Soundcards? \ VOGONS](#)