



Master Thesis:

# Camera mirrors impact on driver visual performance



## Background

The automotive industry is searching for solutions to reduce the energy consumption of their cars. Camera systems replacing rearview mirrors can improve the car's aerodynamic performance, save cost and with the right design also improve the visual field of view. But what is the visual impact for the users using Camera Monitoring Systems displays? Can Camera Monitoring Systems (CMS) replace traditional mirrors and offer a just as good visual experience?



## Goal

Investigate the user experience of CMS-displays with focus on the object perception for users with and without common visual impairments. Develop guidelines for design of CMS as mirror replacements based on identified key parameters affecting the driver's ability of object identification and distance assessments.

## Task Description

- Scientific literature study with focus on visual ergonomics
- Identify specific research questions to be addressed
- Identify key parameters affecting the visual object perception while driving and using rear view mirror systems
- Design of Experiment and execution of experimental user studies comparing traditional rearview mirrors and CMS-systems
- Identify pros and cons with traditional rearview mirrors and CMS-systems
- Develop evaluation method
- Develop guidelines and general recommendations for CMS design

## Prerequisites

The thesis is suitable for two master students with profiles towards human centric engineering. It's recommended to have knowledge within CAD tools, preferably Catia V5. The thesis will be carried out at Volvo Cars Göteborg. The thesis work start is in Jan/Feb 2021 and runs for 20 weeks. Driver license B is required.

## Contact

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