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# Implementation and Evaluation of Driver Distraction Detection Techniques.

## *ABSTRACT - Masterthesis*

The growing advancement and use of in vehicle information systems and entertainment systems is causing an arising need for driver assistance safety systems. Driver distraction is one of the main causes for many of the accidents. Developing a technique to detect the distracted state of the driver as a part of the Advanced Driver Assistance Systems (ADAS) and provide a notification to the distracted driver would be very useful in reducing the number of accidents.

Visual sensors would be used to identify distracted states of the driver from the driver's head positions, gaze positions, images from the sensor and vehicle signals. The distraction detection would be performed using two techniques:

- Rule-Based Technique
- Deep learning

The rule based technique will include fetching data such as driver head position, driver eye position and head orientation detected using algorithms performed on the images obtained from the camera sensor. CAN signals from the vehicle would also be used as an input to filter out certain scenarios (for e.g. Turns taken by the driver) and distraction cases of the driver. The visual distraction detection technique aims on, focusing on continuous long glances distraction cases and repetitive short glances distraction cases of the driver. The deep learning approach would focus on using low level features and raw image data to detect the distracted states of the driver. Data for training the models will be collected using a static driving simulator, with real human subjects performing specific tasks (for e.g. eating while driving). The feature and image data will be used to train a machine learning algorithm. Based on the output obtained, a conclusion about the driver state would be established. A concluding comparison between the two approaches is intended to be done as the final task for the thesis to deduce the best approach to detect the distracted states of the driver while driving.