Adaptive Region of Interest Masking for Teleoperated Driving

This work can be done in German or English

For safe remote control of a vehicle the operator needs to be fully aware of the current traffic situation. The operator gets its information for camera data that are streamed from the vehicle over a constrained network to the operator workplace. A low transmission rate will result in a low visual quality which might be an issue for the operator in controlling the vehicle. But not all parts in the image are important for the operator. [1] suggest to apply a static mask on the camera data which would reduce the overall image size and result in a better image quality for the important regions.

The objective of this thesis is to implement this mask in a block based way as an optimal input for a video encoder. Further there should be multiple masks which are applied according to the vehicle’s lateral movement. The adaptive ROI masks implementation should be integrated into the existing teleoperation setup based on TELECARLA [2].

Tasks

- Implement adaptive block-based ROI masking as C++ ROS Node
- Integrate in to TELECARLA setup
- Evaluate driving performance and image quality of ROI and non-ROI driving for an equal target bitrate

References


Prerequisites

- Experience with ROS and C++
- Knowledge of Linux and Python
- Basic understanding of video compression

Advisors

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