

TOPIC FOR A MASTER'S THESIS

Improved Emergency Lane Creation Using V2V Communication

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MOTIVATION

The creation of an Emergency Lane (EL) has received a lot of media attention in recent years. Many accidents have been reported in which Emergency Vehicles (EVs) only reach the scene of the accident with effort and loss of time. Even though creating the EL is mandatory for all traffic, many issues exist: Drivers do not react immediately, they do not make room for EVs, or wait in front of red lights instead of carefully crossing the stop line. Hectic and wrong reactions and resulting driving decisions are dangerous for other traffic as well as for EVs.

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GOALS OF THIS THESIS

The purpose of this thesis is to quantitatively investigate the use of V2V communication for the creation and maintenance of ELs and its impact on EVs. This is done by simulation studies with Veins and SUMO. Possible milestones are as follows:

- Literature research on legal requirements for EVs and human drivers in corresponding situations (in Germany).
- Literature research on proposed solutions for using V2V communication to improve emergency lane creation and maintenance.
- Optional design of new/extended protocols for using V2V communication to improve emergency lane creation and maintenance.
- Implementation of existing and proposed protocols in Veins and SUMO (C++).
- Evaluation of existing and proposed protocols in simulation studies with Veins.

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