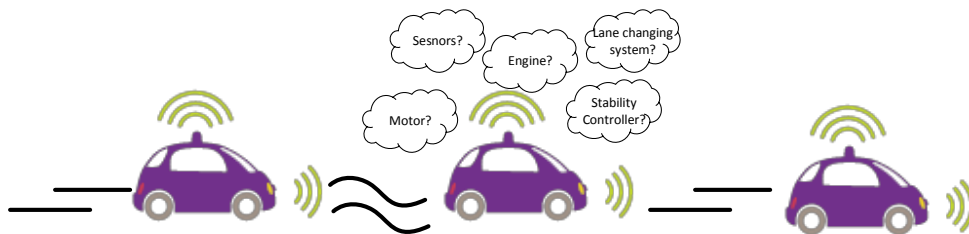


Master Thesis Proposal

Active Fault Diagnosis Using Optimal Control Methods

System monitoring is important in autonomous systems to fulfill functional safety and assure reliability with respect to system faults. When human drivers are replaced in autonomous vehicles, important fault classification performance is lost since abnormal behavior sensed by the driver often are necessary for efficient troubleshooting at the workshop. Since there is no driver detecting strange vehicle behavior, the self-diagnosis capabilities of the vehicle are important. One such tool is active diagnosis, i.e. how to operate the system in order to excite the fault such that it can be detected, without deviating significantly from nominal system operation.



In this thesis work, the active fault diagnosis problem should be investigated as an optimal control problem and formulated using tools like CasADi. The objective is to model and analyze an autonomous vehicle scenario where active fault diagnosis is performed without significantly affecting vehicle driving behavior.

We are looking for students who are interested in learning more about formulating optimal control problems and active fault diagnosis and work with problems that are relevant for developing reliable autonomous vehicles.

If you are interested or have questions, please feel free to mail me:

daniel.jung@liu.se

or come by my office in the vehicular systems corridor (B-building behind Café Java).