Project proposal

## Fault detection and classification using sensor data from an internal combustion engine

In this project, we want to investigate and evaluate Machine Learning methods for fault diagnosis of an internal combustion engine. Data will be used from one of the engines in the vehicular systems engine lab to train and analyze one or more machine learning methods for fault diagnosis of non-linear dynamic systems.

Fault detection and classification is an important function in modern vehicles. New types of faults and fault manifestations can occur over time and it is relevant to identify if new data comes from a known fault (training data is available from that fault) or a new type of fault. Identifying likely unknown faults are important information for engineers and workshop technicians to understand the root cause of the fault. In this project we want to design a system which can classify faults and identify when new types of faults have occurred.

In this project, the main objective is to implement a data-driven classifier that from engine sensor data can

* detect when a fault occurs in time series data and classify which fault class is most likely.
* Identify fault sequences from unknown faults.
* Incrementally improve classification performance from new data.

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).