Master Thesis Proposal

Data-Driven Fault Classification of Technical Systems Using Time-Series Data

Fault diagnosis and system monitoring considers the problem of classifying the system health and identify if a fault is present in the system. Efficient and easily calibrated fault diagnosis systems are necessary to improve reliability of the monitored system. Strong correlations between signals motivate the use of data-driven classification methods for fault diagnosis. Faults are rare events, resulting in many unknown fault scenarios that must be identified. A complicating factor of data-driven fault diagnosis is to find representative data from relevant fault scenarios. Therefore, it is also important that the diagnosis system can say when the classification output is reliable and identify new scenarios that the diagnosis system has not seen before.

In this master thesis project, the objective is to evaluate data-driven fault classification methods using time-series data. The goal is to get an understanding of how time-series information can be used to improve fault classification accuracy, especially when training data is limited.

We are looking for students with a background in signal processing and data analysis that are interested in machine learning and to apply these methods for pattern analysis. There are also possibilities to conduct experiments and collect real data using one of the engines in the engine lab.

If you are interested or have questions, please feel free to mail me:
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or come by my office in the vehicular systems corridor (B-building behind Café Java).