

Master Thesis Proposal

Anonymous Distributed Calibration of Data-driven Fault Classifiers

Machine Learning and data-driven classification in system monitoring applications are becoming more and more relevant thanks to connected systems and big data. One solution to handle data is to set up a central server logging data from all units and calibrating fault classifiers that are distributed back to all users. However, there might be situations where costumers do not want to share data or when data streaming is not feasible due to limited bandwidth. Distributed optimization is one solution where the calibration of fault classifiers is computed locally at each costumer and minimal data is shared with others while still being able to improve fault classification performance.

In this master thesis project, the objective is to analyze the capabilities of performing distributed optimization for calibration of fault classifiers using a method called *Alternating Directions Method of Multipliers (ADMM)*. Real data from different faults can be measured from an internal combustion engine in the Vehicular System Lab. A simulation environment of a distributed optimization scenario shall be implemented and tested using engine data.

In this master thesis project, we are looking for students who are interested in working with formulating optimization problems for machine learning and data classification, convex optimization, and distributed computations.

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).