Automated Troubleshooter of a Fuel Injection System

Background:
The eXtreme high Pressure fuel-Injection system (XPI) used on Scania busses and trucks is a sophisticated system that injects fuel into the cylinders with exceptional precision enhancing vehicle performance and fuel economy. However when faults occur, it is a complex system that can be difficult to troubleshoot for workshop mechanics. To troubleshoot the system mechanics have software for performing tests on the system and a guide that shows which tests that should be executed. Developing a guide that is effective in both finding the faults and also makes efficient use of time and resources is difficult. By using state-of-the-art decision-theoretic techniques we can automatically generate a cost-optimized troubleshooting guide. The effectiveness of the guide depends highly on the correctness of the underlying models.

Assignment:
In this master thesis, the students shall create and validate a diagnostic model of the XPI-system and implement a system for cost-optimal decision making. The diagnostic model should be based on a Bayesian network include all the tests and actions necessary for troubleshooting. The goal is to verify the correctness of the models in realistic conditions.

Education:
We seek engineering students that are independent and have a general understanding and interest of combustion engines. General knowledge of programming, and statistical analysis is meritorious.

Scania gives financial compensation and help with accommodation if needed.

Number of students:
2

Start date:
August

Estimated time needed:
20 weeks

Contact persons and supervisors:
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