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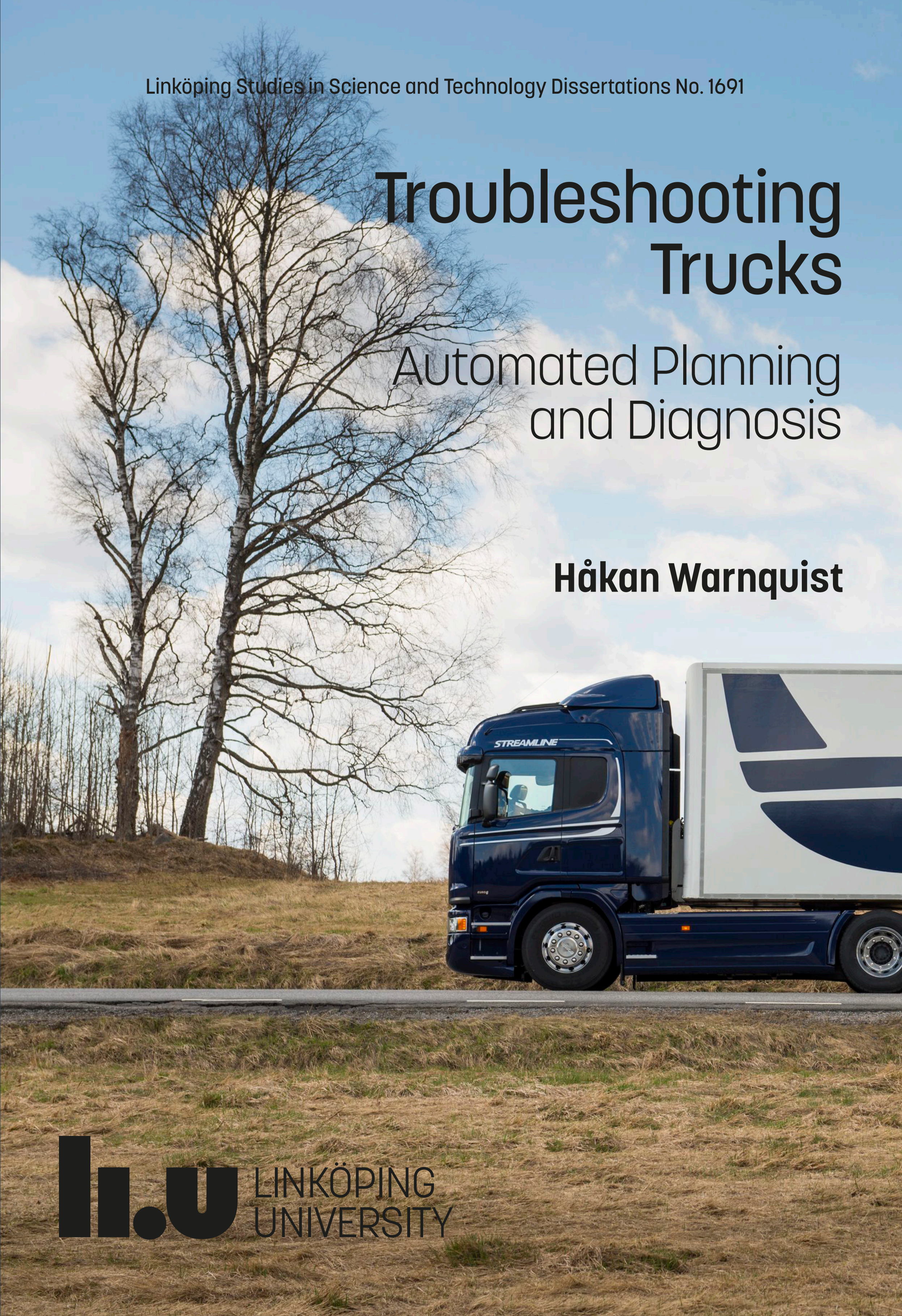

Troubleshooting Trucks

Automated Planning and Diagnosis

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This thesis considers computer-assisted troubleshooting of heavy vehicles such as trucks and buses. In this setting, the person that is troubleshooting a vehicle problem is assisted by a computer that is capable of listing possible faults that can explain the problem and gives recommendations of which actions to take in order to solve the problem such that the expected cost of restoring the vehicle is low. To achieve this, such a system must be capable of solving two problems: the diagnosis problem of finding which the possible faults are and the decision problem of deciding which action should be taken.

The diagnosis problem has been approached using Bayesian network models. Frameworks have been developed for the case when the vehicle is in the workshop only and for remote diagnosis when the vehicle is monitored during longer periods of time.

The decision problem has been solved by creating planners that select actions such that the expected cost of repairing the vehicle is minimized. New methods, algorithms, and models have been developed for improving the performance of the planner.

The theory developed has been evaluated on models of an auxiliary braking system, a fuel injection system, and an engine temperature control and monitoring system.

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