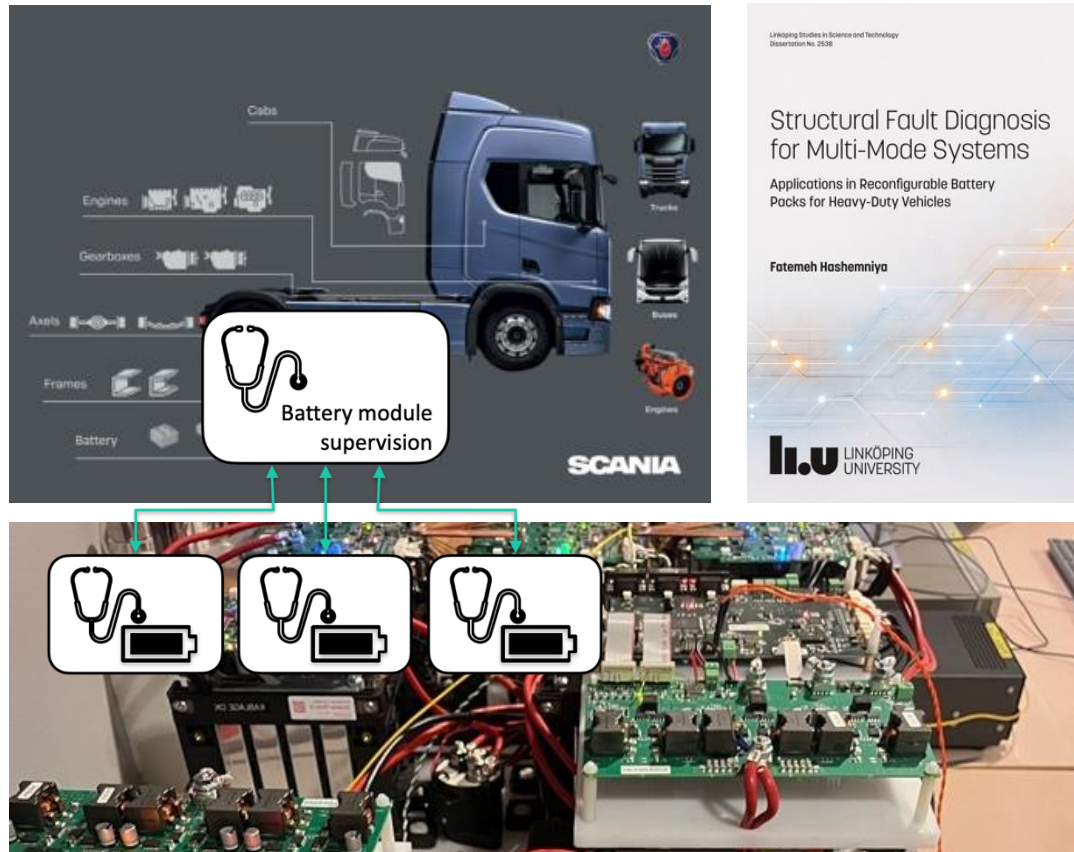


Diagnostics and supervision of dynamically configurable battery systems



Background: Battery cost and sustainability can be improved through wider cell tolerances, modular battery architectures, and reuse of battery modules. Achieving this requires advanced monitoring and diagnosis to ensure safe and efficient operation throughout the battery lifecycle.

Results: Advanced monitoring and diagnosis algorithms for reconfigurable batteries have been developed, enabling scalable diagnosis of systems with many possible configurations. The methods support hierarchical implementation, where high-resolution measurements are processed locally and aggregated information is used for system-level diagnosis. The algorithms have been implemented and evaluated on real reconfigurable battery packs, where injected sensor faults were successfully detected and isolated. The results also show how battery configuration affects diagnosability and provide guidance for cost-effective sensor-system design.

More information: [Fatemeh Hashemniya's PhD thesis](#)

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