Institut für Verteilte Systeme
Institute of Distributed Systems

ulm university universität ulm

Comparing different vehicle architectures based on attack path analysis

Bachelor's Thesis

12 CP

In this thesis you have to make attack path analyses on different internal vehicle network architectures and compare them based on which provides more security with regards attack paths.

The first step would be creating multiple different architecture diagrams. Then you have to write a program, which reads files of a vehicle network topology, maps this to a list of entry point and target ECUs, and generates a list of all possible attack paths. To get a quick and early result, this list should be sorted by the number of hops over each gateway. The next step would be giving each entry point, gateway and connection a rating on how big the attack feasibility for this element is. Then, attack paths can be calculated - e.g. with the formula of the paper "ThreatSurf A method for automated Threat Surface assessment". At last, you have to decide on a criteria on how to rate the different topologies and compare them with it.

Suitable for all students who are interested in the automotive and security domain

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If your are interested or you need additional details, feel free to contact me or drop by for a non-binding chat.