Abstract:

Future cars will host massively more functionality that comes along with the introduction of new technologies such as neural networks and data fusion, which are enablers for autonomous driving, but which require massive processing capabilities. Hence, new architectures are required that can handle the contradicting requirements for efficiency and safety compliance. The increased complexity and size of upcoming target architectures raise the need for advanced design methodologies and tool support. In this work, we present an approach that combines model-driven development (MDD) with design space exploration (DSE) that can explore suitable architectures of safety functions and platforms also in early design phases and enables trade-off decisions. The DSE uses optimization decomposition for complexity reduction and reusability while respecting the dependencies implied by development processes.