

What to verify if your driving functions depend on machine learning?

Prof. Dr. Martin Fränzle, Carl von Ossietzky Universität Oldenburg

Algorithms incorporating learned functionality play an increasingly important role for highly automated vehicles. Despite their impressive performance for cognitive tasks such as environmental perception, their verification within a safety analysis remains one of the most challenging tasks within the development process. We propose to integrate known statistical guarantee statements about the generalization ability from individual data points with the functional architecture as well as constraints about the dynamics and ontology of the physical world, which allows us to (a) formulate and solve a safety verification problem of architectures using artificial intelligence components and (b) to understand traditional safety mechanisms as a bridge over the gap between performance of perception sub-systems and safety of the overall driving function.