University of Stuttgart
Germany

SUPER – Stuttgart University Program for Experiencing Research
Project Information

Institute's Information

Name of Institute	Institute of Industrial Automation and Software Engineering (IAS)
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Duration of Project/Number of Students

June/July	
June/July/August	X
Number of Students	2

Name of Project Exploring AI in software-defined mobility

Beneficial Skills & Knowledge Knowledge about information technology and autonomous systems, prior experience in AI and 5G advantageous

Description of Work

Modern system development is characterized by increased customer requirements and greater market and time pressure. The innovations required for this are created by a higher proportion of software that is continuously updated throughout the product lifecycle, resulting in what is called a software-defined product. This is also reflected in the automotive industry, where new business models are being established via software-defined vehicles. Modern E/E architectures enable the vehicle to communicate with its environment as well as collect data during operation, which can then be used by manufacturers to improve driving or comfort services.
Both AI technologies and 5G connectivity serve as enablers for said activities. With 5G, lower latency and bigger bandwidth transmissions become possible, permitting advanced real-time functionalities such as car fleet management. In this context, AI technologies are used to automatically analyze and improve both the cars and the server/edge backend. To research AI capabilities in a 5G environment, the IAS works on the realization of a 5G test track, covering the whole campus of the University of Stuttgart. The overarching goal lies in the creation of a data loop for continuous updates, in which data of participating cars can be collected and analyzed in real-time. In this way, the impact of software changes can be made visible.

Task to be done

This work is split into theoretical and practical activities: For the theory, it shall be explored how AI can help to both analyze and improve systems in a connected car environment. Regarding the practical part, the student will work in an expert team at the IAS on the design and implementation of the 5G test track, in particular its data loop.