

## SUPER – Stuttgart University Program for Experiencing Research Project Information

Institute's Information	
Name of Institute	Institute of Industrial Automation and Software Engineering (IAS)
Contact Person	Johannes Stümpfle
Phone	+49 711 685 67295
e-mail	johannes.stuempfle@ias.uni-stuttgart.de
<b>Duration of Project</b>	ct/Number of Students
June/July	
June/July/August	
Number of Student	s <u>1</u>
Name of Project	Al-based Evolution of Variant-Rich Software Systems
Beneficial Skills & Knowledge	Knowledge in Software Engineering and prior Experience in Al

## **Description of Work**

In the dynamic landscape of software development, variant-rich systems have emerged as a compelling response to diverse customer and market demands, where customization is paramount. Fuelled by the principles of Continuous Integration/Continuous Deployment (CI/CD), these systems navigate the intricate balance of incorporating new features and addressing bugs in a continuous evolution process. A perfect example is the automotive industry, currently navigating a transformative journey from hardware-centric to software-defined vehicles. In this paradigm shift, the industry grapples with the challenge of managing a high variance of software configurations while striving for continuous evolution. In this context, AI systems should be investigated, on how to support the complex task of evolving variant-rich software systems. Therefore, the intelligent cockpit at the IAS serves as a demonstrator, providing a hands-on research opportunity for exploring variant-rich software and shaping insights into the future trajectory of automotive software.

This project encompasses both theoretical and practical dimensions. The theoretical aspect involves investigating the evolution of variant-rich software systems and possible Al-Algorithms to support the process. In the practical domain, the student will collaborate with an expert team at the IAS, contributing to the design and implementation of Al systems aimed at managing the complexity inherent in variant-rich software systems, specifically focusing on the intelligent cockpit demonstrator.

