Contribution ID: **234** Type: **not specified**

Synthetic Data and Small Language Models: Privacy-Optimized AI for Electric Vehicles

Friday 28 February 2025 11:00 (45 minutes)

As electric vehicles become more software-centric, AI-driven features increasingly shape the driving experience—from adaptive navigation to proactive diagnostics—yet they often rely on vast amounts of sensitive data. In this session, we will explore two complementary strategies to address these challenges: first, how synthetic data generated or augmented via Large Language Models and statistical methods empowers developers to train, fine-tune, and validate automotive systems without exposing real user information. Second, we will examine how Small Language Models (SLMs) can serve as function-calling agents in vehicles, offering a flexible and robust alternative to traditional rule-based systems. By applying compression techniques such as pruning, healing, and quantization to architectures like Microsoft's Phi-3 mini, these compact models fit within hardware constraints yet retain the capacity to handle complex tasks efficiently. Together, these approaches pave the way for personalized yet privacy-compliant innovations that accelerate development in the evolving electric vehicle landscape.

I want to participate in the youngRSE prize

Presenters: WINS, Alexandra (Mercedes-Benz); HEIDRICH, Benedikt (Mercedes-Benz)

Session Classification: SE Industry Day Session 1

Track Classification: Software Engineering (SE 2025)