

# Benchmarking Field Operational Testing Strategies for ADAS: A Monte Carlo Simulation Approach to Aid the Selection of the Best Test Strategy Depending on Vehicle Misbehavior

Expected Start Date: 01.05.2025

## Task description in English

At the Institute of Automotive Engineering of TU Darmstadt (FZD), we research validation strategies for Advanced Driving Assistance (ADAS) and Automated Driving Systems (ADS), incorporating field tests in collaboration with industry. Modern ADAS and ADS promise enhanced safety but require extensive validation. In this thesis, a virtual comparison of test strategies should be implemented using Monte Carlo Simulations.

## Task Details

- Study: Fundamentals of ADAS/AD safety (ISO 21448/SOTIF) and Field Operational Testing (FOT).
- Define: Simulation requirements to evaluate test strategies and represent vehicle misbehavior using probabilistic modelling.
- Implement: A simulation framework that fulfills the requirements in python.
- Simulate: Strategies and analyze sensitivity to parameter variations.
- Evaluate: Various approaches for system performance assessment.
- Conclude: Document findings and derive recommendations.



**NOTICE:** All projects and theses at FZD can be done in English or German, as preferred.

**ANMERKUNG:** Alle Projekte und Arbeiten bei FZD können wahlweise in Englisch oder Deutsch durchgeführt werden.