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PROFESSIONAL EXPERIENCE

Mercedes-Benz

Working Student

Jan. 2026 – Jun. 2026

Untertürkheim, Germany

- **Extended and updated Simulink models** for G-Turn maneuvers on inclined road surfaces and analyzed and minimized vehicle deviations.
- **Developed a multirate Simulink model** to simulate CAN-based transmission of wheel-speed signals between multiple microcontrollers.
- **Analyzed and validated CAN communication latencies using CANape** and integrated the identified communication characteristics into simulation models and updated the slip/speed controller.

Mercedes-Benz

Working Student

Jun. 2025 – Nov. 2025

Untertürkheim, Germany

- **Validated and parameterized tire models** in simulation environments and analyzed model deviations and vehicle behavior.
- **Developed and conducted standardized driving maneuvers** and systematically evaluated experimental measurement data to identify and analyze deviations.
- **Integrated and validated vehicle controllers and drivetrain subsystems** in simulation environments and compared simulation results with measurement data.

Mercedes-AMG

Working Student

Oct. 2024 – Mar. 2025

Affalterbach, Germany

- **Developed, executed and verified software tests** for automotive software functions on SiL, HiL and other test platforms.
- **Developed reusable test functions and automated test cases** for vehicle dynamics functions to improve the efficiency and reproducibility of software validation.
- **Managed and processed test specifications in JIRA and Xray** and developed a Python-based AI tool for automated feasibility assessment of test specifications.

Mercedes-AMG

Intern

Mar. 2024 – Aug. 2024

Affalterbach, Germany

- **Planned and developed a cross-system test concept** for the validation of automotive software functions and system integration on SiL, HiL and powertrain test benches.
- **Developed and executed manual and automated test routines and test cases** for automotive software functions on SiL, HiL and powertrain test benches.
- **Analyzed test results and coordinated test activities** as part of system integration and vehicle validation.

EDUCATION

RPTU Kaiserslautern

Master of Science in Commercial Vehicle Technology

Oct. 2022 – Sep. 2026

Kaiserslautern, Germany

- **Focus:** Automotive Software Development, Control Engineering, E-Mobility, Modeling & Simulation, Robotics
- **Master's Thesis:** System Integration of an Area-Covering Path Planner for Drones with a Graphical User Interface in ROS 2

Savitribai Phule Pune University

Bachelor of Engineering in Mechanical Engineering

Sep. 2017 – May 2021

Pune, India

- **Focus:** Automotive Engineering, Software Development, Mechatronics

PROJECTS

Area-Covering Drone Path Planner and ROS 2 GUI | *Master's Thesis*

- **Developed a modular ROS 2 framework** for interactive definition, planning and visualization of UAV area-coverage missions in RViz2.
- **Integrated and evaluated coverage path planning algorithms** based on OpenNav and a custom Spanning Tree Coverage approach for polygonal operational areas.
- **Developed and validated software components** in Python and C++ under Linux using ROS 2, RViz2 and Gazebo with integration through ROS 2 topics and services.

F1 Race Strategy ML | *Python / Simulation / Machine Learning*

- **Developed a modular Python race simulation framework** for modeling tire degradation, tire strategies, pit stops, race conditions and lap times.
- **Implemented and evaluated machine learning models** using feature engineering, train/test splitting, cross-validation and hyperparameter tuning; compared linear regression, Random Forest and Gradient Boosting using MAE, RMSE and R^2 .
- **Integrated simulation, ML modeling and strategy optimization** to automatically generate and select race strategies and validate ML-based selection against the fastest strategy found through simulation; developed a configurable CLI with automated tests and visualization.

Energy Management System for Plug-in Hybrid Electric Vehicles

- **Developed and evaluated a rule-based energy management strategy** to minimize fuel consumption during standardized driving cycles.
- **Simulated and validated different operating strategies** considering battery state of charge.
- **Evaluated different driving modes**, including electric driving, regenerative braking, load-point shifting and conventional driving.

TECHNICAL SKILLS

Programming: Python, C++, MATLAB

Machine Learning: Scikit-learn, Regression, Gradient Boosting, Random Forest, Feature Engineering, Train/Test Split, Cross-Validation, Hyperparameter Tuning, MAE, RMSE, R^2

Simulation & Modeling: MATLAB/Simulink, Python-based Simulation, Vehicle Dynamics, Tire Modeling, Multirate Modeling, Optimization Algorithms

Software Engineering: Object-Oriented Development, Modular Software Architecture, CLI Development, Unit and Integration Testing, Pytest, Git, GitLab, Reproducible Software Development

Automotive Software & Testing: SiL, HiL, System Integration, Verification & Validation, Test Automation, Test Infrastructure, ECU-TEST, Test.Guide

Automotive Tools & Communication: JIRA, Xray, CANape, CAN, Vehicle Networks, YAML, APIs

Robotics & Software Development: ROS 2, UAVs, Coverage Path Planning, RViz2, Gazebo, Linux

LANGUAGES

German: C1 **English:** C1 **Hindi:** C2 **Marathi:** C2

HOBBIES & INTERESTS

Hobbies: Cooking, Football, Reading, Listening to Music, Running, Hiking

Interests: Formula 1, Music Production, Films & Series, Cars, Sports