

Curriculum Vitae

Personal Information:

Name: Mayur Rajendra Waghchoure

Date of Birth: 05/07/1995

Nationality: Indian

Visa Status: Student Resident permit Germany and Work permit approved for Belgium

Address: Aachen, NRW, Germany

Phone: +49 15730676109

Email: mayurwaghchoure1995@gmail.com

LinkedIn: [LinkedIn](#)

GitHub/Portfolio: [GitHub Portfolio](#)

Work Experience:

Autonomous Driving Software Engineer

Deontic.ai | Leuven, Belgium | 04/2025 – Present

Contributing to state-of-the-art autonomous driving testing by combining NLP with ASAM OpenX standards and ODD-based scenario generation strategies.

- Integrated sentence boundary detection and Topic Modelling from OCR-extracted text.
- Generated Model-Based Systems Engineering (MBSE)-compatible requirements and ODD attributes using LLM.
- Developed fine-tuned LLM pipelines to generate scenario suites for safety evaluation and validation using OpenX standards.

AI Content Creator

Think Autonomous | Remote | 01/2025 – Present

Produced advanced AI tutorials and project walkthroughs to educate learners on modern autonomous vehicle technologies.

- Delivered projects on lidar-camera calibration, multi-lidar registration (GICP+ICP), and sensor fusion.
- Built and demonstrated 4D Perception systems using OpenPCDet, multi-object tracking, and rerun visualizer.
- Developing tutorials on 3D reconstruction using DLC MVS, SFM, NeRF, and Gaussian Splatting.
- Created SLAM solutions using Kiss ICP and implemented advanced perception strategies.

ADAS System Consultant

Dorle Controls Pvt Ltd (Client – Battle Motors, USA) | Aachen, Germany | 12/2024 – 02/2025

Developed system requirements, SysML diagrams, and test plans for ADAS features for class 8 trucks.

Implemented Automatic High Beam, Lane Departure Warning, and Highway Departure/Braking systems.

Master Thesis Student

Siemens Digital Software Industries | Leuven, Belgium | 05/2024 – 11/2024

- Developed a learning-based critical maneuver detection framework for autonomous vehicles using the **nuScenes dataset** (850 scenarios).
- Utilized Sparse4Dv3 and GeMap followed by a unique graph-based world model, maneuver localization, and knowledge-based rules for maneuver detection, extracting edge-case scenarios with **80% accuracy** to accelerate verification and validation in real-world applications.
- Created trajectory and graph-based datasets with a knowledge-based approach and trained a GNN and Transformer architecture for critical maneuver recognition.
- Developed an agentic compound AI system for video understanding by integrating 12 agents with LangChain, Ollama embeddings, Chroma DB for retrieval-augmented generation (RAG), vision-language models (LLMs from LLaMA and LLAVA), and **Groq API**.

Research and Development Intern

FEV.io GmbH | Aachen, Germany | 09/2023 – 01/2024

- Designed C++ and ROS drivers for an open simulation interface between the dSpace simulator and ROS-based autonomous driving functions.
- Built an Android app for intelligent infotainment systems utilizing LLMs and the Whisper API.

Student Research Assistant

Institute of Automotive Engineering (IKA), RWTH Aachen University | Aachen, Germany | 12/2022 – 03/2023

- Built Dockerized ROS environments for scalable automation and testing of autonomous driving systems.
- Enhanced accessibility for EdX students by standardizing Docker environments across different operating systems.
- Updated course assignments for **Automated and Connected Driving Challenges** to support **ROS1/ROS2**, ensuring compatibility and comprehensive testing to improve educational outcomes.

Autonomous Driving Software Engineer

Dorle Controls Pvt Ltd | Pune, India | 06/2020 – 09/2022

- Led a team of 6 engineers to develop, test, and deploy Level-2 Autonomous Driving features including Sensor Fusion, FCW, AEB, ACC, LKA, and LCA.
- Created a highway autopilot system and implemented motion prediction algorithms for ADAS.
- Published 3 research papers in SAE International Journals and conducted 12 workshops for corporate participants from companies such as Motional, Ford, NVIDIA, and various US university students.

Support Service Engineer

Tata Motors Ltd | Pune, India | 02/2018 – 09/2018

- Conducted root cause analysis to resolve tire air pressure reduction issues.
- Managed a team of 23 technicians in wheel and tire assembly processes.

Education:**Master of Science in Robotic Systems Engineering**

RWTH Aachen University | Aachen, Germany | 10/2022 – Present

- **Thesis:** *Learning-Based Maneuver Detection from Ego-Perspective Camera Data for Autonomous Driving Systems*
 - Employed the NuScenes dataset (850 scenarios) to extract edge-case driving scenarios with 80% accuracy, resulting in faster verification and validation in real-world applications using scenario based testing.

Bachelor of Engineering in Mechanical Engineering

Savitribai Phule Pune University | Pune, India | 2012 – 2016

Certifications:

- **Perception System Development Certification for Autonomous & Robotics Applications** (Think Autonomous)
 - Topics: Point Clouds, Kalman Filters, Stereo Vision, SLAM, ROS, and DeepSort Algorithms.
-

Technical Skills:

- **Programming Languages:** Python, C++, MATLAB, Kotlin
 - **AI/ML Frameworks:** PyTorch, TensorFlow, Keras, OpenCV
 - **Big Data Tools:** Apache Spark, Databricks
 - **Robotics Frameworks:** ROS, ROS2, MATLAB/Simulink
 - **DevOps/CI-CD Tools:** Docker, Kubernetes, Jenkins, Terraform
 - **Cloud Platforms:** AWS, Google Cloud
 - **Machine Learning Specializations:** Computer Vision, SLAM, Reinforcement Learning, Generative AI
-

Projects:**RTAB-Map-Based SLAM for Autonomous Navigation**

- Developed a SLAM system using lidar and camera inputs with ROS2 and RTAB-Map, improving localization accuracy in dynamic robotics environments.

Drivable Area Detection Using UNet and Semantic Segmentation

- Designed a deep learning model employing UNet for semantic segmentation to robustly detect drivable areas in urban and highway scenarios.

End-to-End ML Pipeline for Semantic BEV Prediction

- Built a production-grade ML pipeline for semantic Bird's Eye View (BEV) prediction using multi-view camera images.

Multi-Object Tracking with YOLOv3 and DeepSort

- Implemented real-time multi-object tracking for autonomous driving applications.

3D Object Detection Using Traditional Methods and PointPillars

- Utilized traditional approaches (RANSAC, DBSCAN, PCA) for 3D object detection on LiDAR data and further enhanced detection performance by implementing the PointPillars architecture.

3D Reconstruction Using Stereo Vision and Pseudo LiDARs

- Developed a separate project focusing on 3D reconstruction from stereo camera data, generating pseudo LiDAR data to improve scene understanding and depth estimation.

Languages:

- **English:** Fluent (C1)
- **German:** Beginner (A1)
- **Marathi:** Native

Achievements and Publications:

- **Research Papers:**
 1. *"A Receding Horizon Autopilot for Two-Lane Highway Automated Driving Applications"* – SAE International Journal, 2022
 2. *"A Comprehensive Rule-Based Control Strategy for Automated Lane Centering System"* – SAE International Journal, 2022
 3. *"Intent Prediction Algorithms for Enhanced ADAS Applications"* – SAE International Journal, 2022
- **YouTube Channel:** Robotics & Autonomous Vehicles – Tutorials on autonomous driving concepts and real-world projects.

References:

- **Aniruddha Dorle**
Head – Engineering and Operations, Dorleco Inc., USA
Email: adrole@dorleco.com
- **Dr. Sarah Barendswaard**
Research Engineer, ADAS Team, Siemens Digital Software Industries, Belgium
Email: sarah.barendswaard@siemens.com