# DILIP AYTHARAPPA

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Dilip Aytharappa

## EDUCATION

**HOCHSCHULE COBURG** — Kronach, Germany
Master of Engineering — Oct 2023 – Mar 2025
Major in **Autonomous Driving;** Minors in Agile Project Execution
Coursework: Sensor Technologies, Deep Learning, Software Testing, Localization, Control Systems, Automated driving functions.

**SIDDAGANGA INSTITUTE OF TECHNOLOGY** — Tumakuru, India
Bachelor of Engineering — July 2018 – Aug 2022
Major in **Mechanical Engineering**; Minors in Python Programming and Data Structure.

## WORK EXPERIENCE

**WIRELESS MOBILITY AUTOMOTIVE GmbH** — Kronach, Germany
Working Student — July 2024 – Present
- Tested Network Access Device (NAD) performance using the ANRITSU MT8000A radio communication test station and iperf.
- Documented software development and testing procedures, gaining hands-on experience with ADB, Raspberry Pi, and Linux.
- Developed and implemented gRPC services in C++ for the telsdk, enabling data call and SMS functionality, allowing clients to access the telsdk directly from the host. Conducted unit testing to validate individual gRPC service functions.

**HOCHSCHULE COBURG** — Kronach, Germany
Research Assistant — May 2024 – Aug 2024
- Facilitated a user study on HMIs for teleoperated automated shuttles, investigating the impact of AR overlays on hazard alerts; project outcomes influenced design decisions, leading to a 30% increase in user engagement during simulations.
- Conducted statistical analysis on data from 37 participants using JASP and Python, examining hazard criticality and task difficulty. Utilized Tobii Pro 3 glasses and The Lab for advanced eye-tracking and behavioral analysis.

**ACCENTURE SOLUTIONS** — Bengaluru, India
Cyber Security Associate — Nov 2022 – Sept 2023
Project: Singapore Gas Network
- Mitigated security incidents and reduced organizational risk through efficient incident response, analyzing over 1,000 logs to identify cause and implement preventive measures. Collaborated with international client to meet cybersecurity requirements.
- Enhanced security monitoring with Microsoft Sentinel, increasing detected incidents by 20%.

**BOSCH LIMITED** — Bengaluru, India
Internship Trainee — Sept 2021 – Nov 2021
- Reduced unplanned downtime by 30% by implementing preventive maintenance practices, resulting in resource optimization.

## UNIVERSITY PROJECTS

**WIPER SYSTEM AND ADAPTIVE CRUISE CONTROL APPLICATION** — October 2024
- **Wiper System Application**: Developed a Simulink model using Model-Based Development (MBD) to implement wiper control functionalities, including logic for multiple wiper modes, rain sensor error handling, speed requests, and active status.
- **Adaptive Cruise Control (ACC)**: Designed a model for Adaptive Cruise Control using MBD principles to handle speed adjustments, safe distance maintenance, and emergency braking logic. Simulated diverse traffic scenarios to validate.

**AUTOMOTIVE RADAR SIGNAL PROCESSING FOR OBJECT DETECTION** — September 2024
- **Radar Signal Preprocessing**: Processed raw radar data using clutter removal and FFT, and Doppler processing isolating moving objects. Applied beamforming techniques for angle estimation and extracted features like range, speed, angle, and reflectivity.
- **Feature Extraction and Object Tracking**: Applied CFAR detection and Kalman filtering to identify, localize, and track objects, extracting key features like distance and velocity, Integrated processed data into ROS for live visualization.

**AI-BASED DRIVER DISTRACTION DETECTION SYSTEM** July 2024

- **Data Augmentation and Model Training**: Utilized **Generative Adversarial Networks (GANs)** to diverse training data with varied driver states, enhancing model robustness. Applied **Convolutional Neural Networks (CNNs)** for image classification, distinguishing between attentive and distracted driver states based on visual cues.
- **Real-Time Detection and System Integration**: Integrated the trained CNN model with **OpenCV** for real-time video processing, classification of driver attention and frame-by-frame analysis with OpenCV on-screen alert overlay.

**AUTONOMOUS PARKING RETRIEVAL TECHNOLOGY** June 2024

- Developed **Parkonomous**: autonomous car retrieval system with ROS2, integrating planning, localization, and control.
- Developed V2X protocols (CAM, CPM, EVCS) for real-time communication, Contributed to python coding and debugging.
- Developed **Park_viz** for car visualization and **Decision_Manager** for state tracking of the vehicle, integrating LiDAR and camera-based object detection for emergency braking.
- Integrated **pure pursuit** and **PID control algorithms** in ROS2 for enhanced **trajectory tracking**, **lateral stability**, and **dynamic response**, ensuring smooth and accurate path-following.
- Developed a containerized simulation environment for testing autonomous vehicle algorithms using Docker and ROS2.
- Performed **test automation** and **quality assurance** in unit and integration testing.

## ACHIEVEMENTS

**BEST PAPER PRESENTATION AT INTERNATIONAL CONFERENCE** Bengaluru, India

Co-presented with colleague March 2022

- Presented a review paper on advancements in 3D printed PEEK-based composites for biomedical applications at the "International Conference on Recent Developments in Mechanical Engineering-2022".

## SKILLS & TOOLS

**TECHNICAL SKILLS**:

**Programming:** Python, C++, MATLAB/Simulink, Algorithm Development and Optimization, Data Processing Pipelines.

**Simulation Tools:** SUMO, Gazebo, Carla, RViz.

**Operating System:** Linux, UNIX, Microsoft Windows.

**Microsoft Office**: MS Word, MS Excel, MS PowerPoint.

**Other Skills:** ROS2(Robot Operating System), GitHub, Computer Vision, PyTest, Docker, SLAM, Software Requirements.

**Algorithms:** Trajectory Planning, Sensor Fusion Path Planning, kalman Filter, Data Structures & Algorithms.

**KEY SKILLS:**

- **Agile Learning**
- **Cross-functional Collaboration**
- **Research Skills**
- **Versatile**

## ADDITIONAL

**Languages:** Professional Working Proficiency in English and Kannada languages, with beginner proficiency in German (A2 CEFR), and actively pursuing further language acquisition.

**Certifications & Training:**

- **ROS2** - TF, URDF, RViz, Gazebo; CAN Protocol, **Model based Development**-MBD-For Automotive using Simulink.
- **Applied Control Systems**: PID+MPC(Model Predictive Control), **ISO 26262** : Functional Safety.
- Docker & DevOps for Simulation and Testing Pipelines.
- Completed in-depth training on **Advanced Driver Assistance Systems (ADAS)** and their integration into Autonomous Driving (AD), covering roles of key sensors (**Camera, Radar, Lidar, Ultrasonic**).