

Harish Natarajan Ravi

Research Engineer

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Professional Overview

Research Engineer with strong experience in C/C++ development and algorithm design for autonomous systems. Skilled in building robust software for environment modelling, object tracking, and perception.

I am eager to apply my expertise in ADAS, software optimization, testing, and system validation to complex mobility systems, delivering reliable and scalable autonomous driving solutions.

Primary stack: C/C++, Python, Embedded C, ROS2, Perception, ADAS, SLAM, Sensor Fusion, Jira, Functional Safety, Signal Processing, ML and DNN, Linux, Git, Matlab/Simulink, TDD, ASPICE, CI/CD

Work Experience

Software Development Engineer | Mercor | Leonberg, DE Jan 2025 – Present

Tech stack: C++, Python, Linux, PyTorch, TensorFlow, ML/DL Frameworks

- Enhanced model performance by optimizing Embodied AI architectures.
- Improved deployment efficiency by integrating models seamlessly into autonomous platforms.
- Increased system reliability by validating AI components using rigorous test pipelines.

ADAS Research Engineer | Porsche Engineering | Mönsheim, DE Sep 2023 – Sep 2024

Tech stack: C++, Python, ROS, PCL, OpenCV, SLAM, Sensor Fusion, Git, Docker, CI/CD

- Built a complete SLAM-based parking map pipeline, improving localization accuracy.
- Boosted relocalisation robustness by integrating LiDAR and camera sensor fusion.
- Refined trajectory alignment by applying loop closure techniques to sensor data.
- Supported HMI development by implementing costmaps and stitched image renderings.
- Reduced test iteration time by evaluating real-time simulation and on-vehicle trial performance.

System Development Engineer | Bosch GmbH | Stuttgart, DE Mar 2023 – Aug 2023

Tech stack: C++, Python, SysML, MBSE, IBM Rhapsody and DOORS, ISO Standards, Jira

- Strengthened system design clarity by modeling perception modules for L3 parking systems.
- Minimized ambiguity in specs by performing detailed ISO-compliant requirements analysis.
- Improved system validation coverage by executing traceable verification workflows.
- Supported cross-functional alignment by collaborating on requirement integration.

Research - Software Engineering | Fraunhofer IEM | Paderborn, DE **Sep 2021 – Feb 2023**

Tech stack: Python, C++, MQTT, Eclipse HONO, Kubernetes, Grafana, Linux, Git

- Developed a car-to-cloud demonstrator to streamline F1 telemetry analysis.
- Contributed to an open-source SDV initiative by supporting integration with KUKSA stack.
- Enabled real-time data flow by implementing odometry and telemetry extraction modules.

Software Development Engineer | Robert Bosch | Bengaluru, IN **Apr 2017 – Sep 2020**

Tech stack: C/C++, Python, Perl, AUTOSAR, TDD, ASPICE, IBM DOORS

- Delivered production-grade service layers by developing diagnostics for global OEMs.
- Accelerated function validation by implementing and testing OBD/parking modules.
- Improved platform scalability by contributing to reusable diagnostic infrastructure.
- Ensured project stability by supporting release cycles with cross-functional teams.

Education

Master's in Computer Engineering | Paderborn University, DE

- Field of Study: Embedded Systems
- GPA: 1,8 (German Grade)

Bachelor's in Electronics | Visvesvaraya Technological University, IN

- Field of Study: Electronics and Communication
- GPA: 2,3 (German Grade)

Theses and Research Works

- Master Thesis - Generation and Relocalization of Parking Maps
- Radar-based perception to enable object detection.
- Disaster Response Robots
- Autonomous Vehicle Perception
- Visual Odometry for Camera Motion Estimation
- Depth Estimation using Transformer models
- Object Classification and Detection using YOLO and RT-DETR models

Skills

Languages: English – Native Speaker, German – Intermediate (pursuing B1.1)

Operating Systems: Linux, Windows, WSL, QNX

Software, Tools and Platforms: ROS, CARLA, Machine and Deep Learning Frameworks, Functional Testing, TRACE32, CAN, Data Handling and Analysis, Docker, CI/CD, UML, Confluence, Nvidia Jetson

Soft Skills: Effective Communication, Problem Solving, Critical Thinking, Teamwork, Adaptability.