Harish Natarajan Ravi

Software Engineer

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Professional Overview

Software Engineer with expertise in mapping, localization, and multi-sensor fusion for autonomous systems. Skilled in developing SLAM and deep learning–based algorithms that enable vehicles to perceive and map complex environments. I aim to apply my strengths in sensor fusion, software development, and system integration to build reliable, high-performance autonomy solutions.

Primary stack: C/C++, Python, ROS2, Sensor Fusion, SLAM, Perception, ML and DNN Frameworks, PyTorch, TensorFlow, LiDAR, Camera, Mapping, Tracking and State Estimation, Linux, Git, CI/CD
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Work Experience

Research Assistant | Fraunhofer IVI | Ingolstadt, DE   Nov 2025 – Present

Tech stack: C++, Python, Sensor Fusion, ML/DL Frameworks, KF, Object Tracking

- Currently working on multi-sensor fusion for the 5GoIng First-Mile intelligent mobility project.
- Doing research on AI-aided multi-object tracking and State Estimations for robust perception.

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

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

- Optimized embodied AI models for improved performance in autonomous systems.
- Integrated and validated AI components to enhance deployment efficiency and system reliability.

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, image renderings, real-time simulation and on-vehicle testing.

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 clarity by modelling L3 perception modules and refined ISO requirements.
- Improved system validation coverage by executing structured, traceable verification workflows.

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.

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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)

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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 Classfication and Detection using YOLO and RT-DETR models

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Skills

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

Operating Systems: Linux, Windows, WSL, QNX

Software, Tools and Platforms: ROS, CARLA, Machine and DNN 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.