

Sandeep Seegehalli Akkalappa



Software Developer and Tester

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LinkedIn

📅 Born: 21.12.1998 • 🇮🇳 Nationality: Indian

Professional Profile

Detail-oriented Software Developer with hands-on experience in robotics, backend systems, and intelligent automation. Skilled in Python, ROS, and CI/CD pipelines, with a focus on developing reliable and efficient robotic software.

Professional Experience

- 01/2025 – Present **Working Student, Software Developer & Tester, Fraunhofer IPA, Stuttgart**
- Developed and extended core **Python** modules for the CARA (Computer-Aided Risk Assessment) tool, improving robustness and maintainability of safety and risk analysis workflows through refactoring, structured logging, and error handling.
 - Designed and implemented an algorithm for automated safety-concept generation in **Python**, enabling consistent creation of safety measures and contributing to the successful beta release of the CARA software.
 - Implemented **GitLab CI/CD** pipelines with **pytest**-based automated testing, increasing test coverage and reliability while reducing manual verification effort for safety-critical software components.
 - Built and integrated a user interface for an AI-supported robot control demonstrator, connecting a stable **Node.js** frontend with a **Python** backend to enable **LLM**-assisted robot command and status interaction.
 - Supported acquisition and industry collaboration activities by identifying relevant industrial contacts and contributing technical input for demonstrations, including the successful operation of an **AI**-based robotic control demonstrator.
- 10/2024 – 03/2025 **Research Assistant (Hiwi), University of Stuttgart, Stuttgart**
- Developed a **ROS**-based dispenser mechanism and integrated it into a robotic pick-and-place pipeline to improve placement repeatability and reduce handling time compared to the prior manual/baseline flow.
 - Designed a deterministic control flow for stacking and conveyor-based transfer, coordinating sensors and actuator commands for stable sequencing.
 - Acted as lab tutor for a real-time **Ada** automation experiment, supervising student implementations on a bottling-plant control system and grading based on correctness, real-time task handling, safety logic, and implementation quality.

- 07/2023 – 07/2024 **Working Student, Software Tester, BOSCH**, Feuerbach
- Developed and executed **unit tests** for internal tool programs, contributing to improved software quality and reliability of command-line automation tools.
 - Performed systematic fault analysis and debugging in tool programs, identifying and resolving issues to ensure stable and correct functionality.
 - Created and maintained a **Docker**-based development and test environment, supporting reproducible testing workflows and efficient execution of software tests.
- 12/2020 – 09/2022 **Analyst - Production Support, Birlasoft**, Bangalore, India
- Monitored cloud and infrastructure health using **VictorOps** and **AWS Grid**, ensuring all system metrics remained within optimal thresholds.
 - Administered **Control-M** tool for scheduling **mission-critical production jobs daily**, maintaining **99.9% uptime** and performing updates with zero downtime.
 - Collaborated with application and infrastructure teams to resolve technical incidents and document system improvements.

Technical Skills

- Languages** Python, Java, JSP, Servlet, JavaScript, SQL, HTML, CSS
- Frameworks** ROS (Robot Operating System), Spring Framework, React JS, FastAPI, PyQt, Pytest
- Tools** Git, Docker, Kubernetes (Familiar), JIRA, AWS Grid, Control-M, VS Code, PyCharm, MQTT Broker
- Systems** Linux (Bash/Shell), Home Assistant

Education

- 10/2022 – Present **M.Sc. Information Technology, University of Stuttgart**, Germany, **Grade: 1.6**
- **Master Thesis:** "Dynamic Function Offloading in Connected Vehicles using Deep Q-Networks (DQN)". Built custom simulation for connected vehicles. Implemented DQN agent in PyTorch for adaptive task offloading.
 - **Research Project:** "Energy Profiling and Optimization in Service-Oriented Robotics". Investigated energy consumption of ROS modules. Optimised code for resource reduction.
- 08/2016 – 09/2020 **B.Eng. Electronics and Communication, Dr Ambedkar Institute of Technology**, Bangalore, India, **CGPA: 8.55**

Other Projects

- 02/2021 – 04/2021 **Order Management System**: Built using **Spring Framework** and **MySQL**; deployed on **Tomcat** to manage inventory and order workflows with reliable request handling.
- 02/2020 – 04/2020 **Garbage Monitoring System**: Developed a prototype using Arduino and Ultrasonic Sensor with GSM module.

Languages

- English C1 (Professional Proficiency)
- German A2 (Beginner)
- Kannada Mother Tongue