

Bhakti Manoj Boob



PERSONAL DETAILS

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WORK EXPERIENCE

01.05.2025 – Present **Research Assistant (Embedded Intelligence)**

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI), Kaiserslautern, Germany

- Implemented and optimized neural networks on Field-Programmable Analog Arrays (FPAA) for textile-based applications, focusing on low-latency and energy-efficient analog designs.
- Integrated machine learning training pipelines into toolchain for analog deployment to accelerate prototype iterations.
- Produced technical documentation and experimental reports for internal reviews.

Key Skills

FPAA Python VHDL C++ AI/ML Neural Networks Analog circuits Prototyping

01.05.2025 – 31.08.2025 **Student Assistant (Real-Time Systems)**

Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Germany

- Managed the Assembler programming laboratory.
- Mentored students in low-level Assembly programming, debugging techniques and hardware integration for ARM Cortex-M0+ based autonomous line following robots.
- Designed and implemented an [automated, IR-based precision timing and race management system](#) that enhanced measurement reliability and enabled reproducible performance evaluations for robots.

Key Skills

ARM Cortex Arduino Assembly language C++ Sensor integration Debugging SW&HW development

01.05.2022 – 31.08.2022 **Internship (Electronics)**

Brose Automotive Systems Private Limited, Pune, India

- Conducted tests on servomotors and characterized EV cooling fan modules.
- Set up and configured test benches, collected and analyzed data and compiled technical test reports.

Key Skills

Test benches Data acquisition Hardware commissioning Measurement technology Documentation

01.01.2022 – 28.02.2022 **Internship (Electrical and Automobile)**

Teklogica Control Systems, Nashik, India

- Worked on Andon management system for an automotive assembly line, supporting PLC and HMI configuration.
- Gained hands-on experience in control panel wiring, assembly of electronic components and prepared wiring diagrams and parts lists.

Key Skills

PLC HMI Control panel wiring Wiring diagrams Electronic assembly Industrial automation

EDUCATION

01.04.2024 – Present **M.Sc. (Embedded Computing Systems)**

Rheinland-Pfälzische Technische Universität (RPTU) Kaiserslautern-Landau, Germany

01.07.2019 – 31.05.2023 **B. Eng. (Instrumentation and Control)**, German scale GPA: 1.4

Savitribai Phule Pune University, Pune, India

Bachelor thesis: [Development of a robotic arm and conveyor for a color-based sorting operation](#)
(Received "Best Outgoing Project Award 2022–23")

TECHNICAL SKILLS

Programming Languages VHDL, SystemVerilog, Assembly, Python, C, C++
PLC / Automation Siemens SIMATIC STEP-7 (TIA Portal), B&R Automation Studio
Modeling / Simulation MATLAB, Simulink, LabVIEW

Advanced knowledge

Advanced knowledge

Good knowledge

LANGUAGE SKILLS

Marwadi, Hindi, Marathi	Native speaker
English	Advanced knowledge (IELTS band score: 8.0)
German	Good knowledge (GOETHE-Zertifikat B1 and currently pursuing B2)

CERTIFICATIONS

- o **MVP-FOX:** Automation training program for PLC, HMI, SCADA and Drives
- o **B&R Control Systems and Tools:** Automation Studio Basic, ST and LD Programming
- o **Google AI, Explore ML** (Intermediate Track)

PROJECTS

- o [Record and playback Pick-and-Place robotic arm using Node-MCU:](#)
Developed a pick-and-place robotic arm using Node-MCU for automated execution of repetitive motion sequences. Implemented a "Teach-and-Repeat" function where joint positions are recorded via potentiometers or server UI, stored in the microcontroller and autonomously replayed. Integrated servomotors, limit switches and a simple user interface to ensure safe and repeatable manipulation.
- o [Home automation with Node-MCU:](#)
Created an IoT-based home automation system using Node-MCU for remote control and monitoring of household appliances over Wi-Fi. Uses voice commands to switch relays and visualize system status in real time. Ensured reliable operation with secure communication, addressing schemes and fail-safe mechanisms suitable for home networks.
- o [Node-MCU based voice-operated robot car:](#)
Implemented a robot car on Node-MCU with voice-controlled motion commands (start, stop, direction changes). Used a smartphone interface for wireless transmission of control commands to the microcontroller. Integrated motor drivers and status LEDs for safe navigation and user feedback.
- o **Electric trolley for biomedical application using B&R PLC:**
Designed and realized an electric trolley controlled via PLC for precise motion control and custom timing in a hospital setting. Developed control logic for safe navigation and automation of operations (start, stop, direction, speed), including sensor integration for obstacle detection and safety. Implemented an intuitive user interface for easy control and real-time monitoring of operational status and fault messages.
- o **Gate Automation with S7-1200 PLC:**
Engineered and implemented an automated access control system using Siemens S7-1200 PLC. Designed control logic for safe and efficient gate opening and closing using position and obstacle sensors. Integrated safety interlocks, manual emergency operation and a simple HMI for status monitoring and fault diagnostics.

HOBBIES & INTERESTS

Hiking, Swimming, Cycling, Reading