

Karthik R

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Work Experience:

12/2023 – 05/2024

Mynaric Lasercom GmbH, Munich, Germany

Working Student – Systems Engineering (Project Management)

- Gained practical experience in system development and project management, working on interdisciplinary tasks related to automation and communication systems.
- Contributed to the specification of system requirements and collaborated with cross-functional teams to develop and validate system architectures.
- Assisted in the testing and integration of system components, ensuring alignment with project objectives and technical specifications.
- Conducted FMEA and test data analysis, including thermal vacuum (TVac) tests, ensuring alignment with project requirements.
- Assisted in developing test setups for laser optical terminals and conducted CAN data analysis.

10/2023 – 05/2024

Hochschule Furtwangen University, Furtwangen, Germany

Master Thesis - AI Based High Speed Image Processing

- Conducted R&D on **AI-based image processing**, optimizing algorithms for efficient **analysis of complex data**.
- Designed and trained advanced **ML/DL models (CNN, TensorFlow, Keras)** to enhance processing speeds and accuracy, setting new standards in real-time image analysis.
- Integrated GPUs and high-resolution cameras to significantly improve processing speed and image quality.

05/2023 – 09/2023

EBM-Papst GmbH, Mulfingen, Germany

Internship – Predevelopment, measurements and testing of Highspeed motors.

- Led the development of schematics and PCB designs, supporting system integration and validation activities.
- Supported the development and testing of control systems for high-speed motors, contributing to system architecture design and performance analysis.
- Conducted system verification and mechanical tests, analyzing performance data to optimize motor reliability and functionality.
- Gained practical experience in system integration, testing methodologies, and problem-solving in a high-tech industrial environment.

01/2019 – 01/2021

SALOC Technologies Pvt Ltd, Bangalore, India

Consultant – Automation Engineer

- Led system integration projects, focusing on requirement-based engineering and system verification for complex automation systems.
- Managed the development and integration of automated systems for industrial applications, working on system specification and design.
- Managed the validation and verification process, coordinating with internal teams and external stakeholders to ensure successful project completion.
- Collaborated with multinational teams to deliver integrated solutions for complex automation projects, ensuring system performance and alignment with customer requirements.
- Applied engineering principles to solve complex problems, ensuring system reliability and safety.
- Collaborated with clients and stakeholders to define test requirements, ensuring successful product validation and verification.
- Supported customer demonstrations and trade shows, providing on-site technical assistance to the sales team and showcasing product capabilities.

08/2018 – 12/2018

Acharya Electronix
Application Engineer

- Enhancement and development of business in automation.
- Collaborated with customers to review drawings and specifications, ensuring alignment with technical requirements and industry standards.
- Provided technical support for system integration and commissioning, ensuring successful project completion and customer satisfaction.

Education:

10.2021 – 05/2024

Master's in Smart Systems

Hochschule Furtwangen University, Germany

Focus On: Automotive Electronics, Embedded Systems, Simulation of dynamical systems, Sensor Technologies, Control Engineering, Robotics.

08/2014 – 01/2018

Bachelor of Engineering in Mechatronics

Visvesvaraya Technological University, India

Focus On: Automotive Electronics, Sensors and actuators, Embedded Systems, Wireless Communication, Digital Signal processing, Robotics, Embedded Systems

Projects:

1. Laser Terminal Demonstrator

- Conducted in-depth analysis of terminal systems and subsystems, focusing on their operational mechanisms and individual components. Replicated the original system into a demonstrative model for enhanced training.
- Developed comprehensive educational materials and interactive modules for new employees and in-house engineers.
- Developed and evaluated electronic assemblies for laser terminals. Planned and executed tests, documented results, and presented findings.

2. Arduino-based temperature measurements of High-speed motor inverters.

- Developed a test bench with sensors and an Arduino interface to measure the negative coefficient temperature in motor inverters on **HIL**.
- Further developed test bench setups and applied control engineering principles to optimize motor inverter performance.
- Analyzed motor test data using a power analyzer, leveraging Python for data interpretation and visualization to generate meaningful insights. **Tools: Python, C++**

3. ADAS Lane Detection

- Innovated a novel lane detection methodology for ADAS by treating road lanes as individual entities, enhancing machine learning model precision and overcoming conventional limitations.
- Implemented **computer vision and video processing algorithms** for ADAS systems, ensuring real-time performance and accuracy. Developed an adaptive perspective transformation technique for **real-time image inputs**, significantly improving lane geometry and spatial positioning accuracy across diverse road conditions. **Tools: Python, OpenCV**

Certifications:

- **Advanced Industrial Process Automation Training**
- The Systems Modeling Language (SysML®) v1.6
- **Model Based System Engineering by Siemens.**
- Scrum: The Basics (PMI)

Knowledge and Skills:

- Programming Languages: **C/C++, Python**
- Software: **DOORS, Siemens NX / Teamcenter, MS Visio**
- Tools: **Keyence, Confluence, JIRA, SAP, MS Office 365 (Excel, PowerPoint, Word), MS Project**
- Methodologies: **SysML, Agile/Scrum, MBSE**
- Knowledge on: **System Engineering, Requirements Engineering, Project management, Validation and Verification Testing, Mechanical and Electrical Testing, System Integration, Statistical Data Analysis, Test Setup Design.**
- Problem Solving, **Strong Communicator, Technical Leadership, Analytical Thinking, Team Player, Project Coordination and strategic way of working.**

Languages:

- English - Business fluency (C1)
- German - Intermediate fluency (B1)