Personal Information

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About Me

With 7 years of professional experience in the technology industry, meet a versatile and technology-driven enthusiast who excels in every stage of the product life cycle. Having designed, tested, and deployed numerous embedded IoT products, he brings a wealth of knowledge and expertise to any project. He is a forward-thinking and innovative problem solver, who is always willing to go the extra mile to develop sustainable solutions that positively impact society. With an ongoing Master's degree in Embedded Systems, he is well-equipped to take on any challenge and is dedicated to delivering the highest quality work.

work Experience

01-08-2023 – Current

Master's Thesis- Livello GmbH, Düsseldorf (Germany) | Full-time

- Designing and developing robust and secure embedded hardware for the industrial smart shelf.
- Implementing NXP EdgeLock secure element with Raspberry Pi Compute Module 4 to achieve secure boot, secure OTA, and secure cloud connectivity.

01-07-2022 – 31-07-2023

Embedded Systems Engineer - FactoryPuls GmbH, Hamburg (Germany) | Part-time

- Designed and developed IoT application for the code Sens device, which were crucial for smart manufacturing and UDI digitization. My significant accomplishment was writing code that seamlessly linked hardware, software, and cloud systems using python.
- Designed and developed an IoT application for the Code Sens mobile, specifically for handheld application. Implemented business logic and carried out code optimizations in the IoT software to deliver high-quality solution.

01-04-2021 – 15-03-2022

Technical Project Manager - Smart Joules Pvt Ltd, New Delhi (India) | Full-time

- Led a team of 20 developers and defined the product strategy, vision, and usability to bridge the gap between the product team and stakeholders.
- Created short- and long-term roadmaps, prioritized backlogs, and managed sprints, stand-ups, reviews, retrospectives, and releases to launch 9 new features in 2 quarters.
- Made crucial decisions about IoT architecture and hardware, oversaw the embedded firmware and hardware team, and managed hardware manufacturing and vendor relations. Proactively improved technical processes, streamlined workflows, and fostered team collaboration.

02-01-2017 - 31-03-2021

Sr. Embedded System Engineer (Lead)- Smart Joules Pvt Ltd, New Delhi (India)

- Led a team of 5 embedded developers to design and develop reliable and cost-effective hardware, reducing costs by 15-20% through component selection and vendor management.
- Engineered, deployed, and managed Smart building energy management controllers across 20+ sites in India. Rolled out 3 versions of DeJoule^{TM} BMS controllers, leveraging a decentralized PID software architecture that runs on an SBC and STM32 microcontroller to optimize HVAC system operations through real-time execution of complex time series algorithms.

- Performed PCB layout design using Altium to ensure high-quality and reliable hardware production.
- Enabled self-diagnostic capabilities in the controllers, allowing for fault identification and diagnosis with logging capabilities on the Grafana dashboard to improve data quality, increasing DQI from 70% to 99%.

Education

01-04-2022 - Pursuing	**Master's degree, Embedded Systems Design (ESD)** **Bremerhaven University of Applied Science (Germany)**
16-08-2012 - 15-06-2016	**Bachelor's degree, Applied Electronics and Instrumentations (AEI)** **Dehradun Institute of technology, Dehradun (India)**
01-11-2018 - 29-03-2019	**Advance High-Speed PCB design** **Fedevel Academy –** Learned to design high-speed PCB design, Schematics, and BOM using the Altium CAD tool. **(View Certificate)**

Projects & Skills

Technical Skills

- Expert in embedded systems design, including architecture, analog and digital circuit design, power supply design (DC/DC, power budgeting, EMI/EMC), and board layout using Altium and Kikad CAD tools. Additionally, skilled in SMD hand soldering and product documentation.
- Proficient in low-level communications protocols such as I2C, SPI, UART, and RS485, as well as wireless chip interfaces like WIFI (ESP32, ESP8266, CC3220S), BLE (Nordic nRF52840), LoRa, and GSM (SIM 900).
- Proficient in using Python for developing IoT applications and programming 8/16/32-bit microcontrollers from ST Microelectronics and Atmel, utilizing embedded C for firmware development, board bring-up, testing, and debugging.
- Familiarity with relevant technologies like Flutter, Node Js, AWS IoT, Lambda, IoT-Stack (Socket, MQTT), Front-End (HTML, CSS), Open-CV, PYQT, SQLite3, Git, and Linux, which can be leveraged to develop and deploy efficient and reliable embedded systems.

Other Projects

- As part of my master's program, I collaborated on a group project to develop an autonomous mobile bot. My responsibilities included designing the application software for data communication between the Bot and a mobile app. I also contributed to the design of the App itself using Flutter. In this project, we used MQTT and Socket to enable real-time communication.
- Developed a wearable medical device for continuous monitoring of SPO2, heart rate, and body temperature. Utilized the Nordic BLE chip, designed chip antenna, and optical sensors from Maxim to ensure accurate readings.
- Designed and implemented a LoRa-RS485 bridge hardware for real-time data transmission from an electricity meter. Built to integrate seamlessly with an open LoRa gateway, this solution provides reliable, low-cost communication options for remote monitoring and control applications.

Achievements

- I have accomplished several notable achievements throughout my career in the field of IoT and embedded systems. I successfully built an IoT product named DeJouleTM from the ground up and led a product team to deploy over 600 IoT controllers on various clients' sites. These controllers have already helped to save approximately 74 thousand tonnes of CO2 emissions. Additionally, I played a key role in establishing the Joule Lab program, aimed at training university students with the latest industry technologies.
- Furthermore, I demonstrated my skills and knowledge in a hackathon organized by EESL, which led to me being named one of the winners. During the competition, I developed and pitched a solution for an EV charging station, highlighting my ability to innovate and provide practical solutions in the realm of IoT, embedded systems.