Aniket Dhere

aniketdhere.com · aniket.dhere@gmail.com · +1-980-313-1401 · linkedin.com/in/aniket-dhere ·

Education

University of North Carolina at Charlotte — Charlotte, NC, USA
Master of Science Electrical Engineering, *GPA: 3.5* — Aug 2019 - May 2021

Savitribai Phule Pune University — Pune, India
Bachelor of Engineering Electronics and Telecommunication, *GPA: 61.99* — Aug 2014 - Dec 2018

Experience

Nikola Corporation — Santa Ana, CA
Battery Systems Application Engineer *{Languages: MATLAB, C, C++}* Feb 2024 - Oct 2024

- Spearheaded the development of the next-gen **Battery Management System (BMS)** using **MATLAB**, aimed at deployment in Fuel Cell Electric Vehicles and Battery Electric Vehicles (**EVs**).
- Tested the features of the microcontroller, like **GPIO, ADC, PWM, SPI, and CAN**, to ensure proper board bring-up and readiness for the application, with the right pins configured.
- Wrote **multi-threaded RTOS's** application layer (**FreeRTOS**) and integrated with the **device drivers**.
- Reviewed software requirements, ensuring alignment with **functional safety (FuSa - ISO26262)** standards, system specifications, and architectural guidelines.

Projen Technology Solutions LLP — Pune, India
Automation Engineer *{Languages: Python, C++}* Nov 2023 - Jan 2024

- Developed a pipeline leveraging a **multi-modal large language model** to automate mechanical piping design by extracting and processing data from technical drawings, improving efficiency and accuracy.

Romeo Power — Vernon, CA
Embedded Software Engineer *{Languages: C, C++, Python}* Jul 2021 - Jun 2023

- Enhanced the **FreeRTOS-based Battery Management System (BMS)** by delivering production-grade releases with performance optimizations and bug fixes, ensuring stability and reliability for critical applications. Error-proofed the pipeline to ensure right firmware is generated for **EV** clients.
- Engineered an innovative alert system within the **Battery Management System (BMS)** to detect potential thermal venting events; monitored performance under varied environmental conditions, ensuring compliance with industry standards; while keeping the response time under 2 minutes.
- Refactored existing **device drivers** to integrate an **ADC-based** temperature sensor communicating over **SPI**, implemented inter-task data transfer, and broadcasted messages via **CAN**.
- Collaborated with the systems team to develop software and documentation compliant with **ISO 26262** and **ASPICE** standards (ASIL Level C), ensuring adherence to industry benchmarks for functional safety and quality.
- Restructured and optimized the core **algorithms** of **State-Of-Charge (SOC)**, **State-Of-Power (SOP)**, and **State-Of-Health (SOH)** to streamline data collection and processing.
- Authored comprehensive **unit tests** to validate firmware functionality and ensure compliance with system requirements, which seamlessly integrated with **Jenkins** based **CI/CD** pipeline.

Soil Agritech Private Limited — Bangalore, India
Embedded Software Intern *{Languages: C++}* Feb 2019 - Apr 2019

- Prototyped a microcontroller development platform based on Texas Instruments' MSP430, aimed at simplifying development for school projects and educational purposes.
- Interfaced multiple sensors, including pulse/heartbeat sensors, fingerprint sensors, temperature sensors, MQ-3 gas sensors, and 3-axis accelerometers, with the U8g2 OLED display, enabling real-time data collection and visualization. Developed a science fiction Space Invader game on the U8g2 OLED screen, implementing joystick controls and enhancing interactive learning for educational projects.

ABU Asia-Pacific Robocon *{Languages: C}* — Pune, India
Technical Lead of Robotics Club — Sept 2015 - May 2018

- Designed a 300W switch-mode power supply alongside MOSFET-based motor driver with PWM speed control, to handle high currents using Altium, and simulated using Proteus.
- Built data acquisition circuits and integrated sensors with microcontrollers (8bit, 16bit, 32bit) for precise real-time control.

Projects

AI Smart Home *{Python, TensorFlow, Node.js, React}* Jul 2024 - Present

- Improved a smart home automation system that integrates advanced AI-driven person detection and mood-based ambiance control.
- Deployed a web-based dashboard using Node.js, React, and Nginx server for real-time monitoring and control of the system.

Music Genre Recognition *{Python, TensorFlow}* Sept 2020 - Dec 2020

- Trained multi-architectural Deep Neural Networks to solve the problem of genre classification.
- Used TensorFlow to train the sampled music dataset (GTZAN) using Long Short-Term Memory RNN.

Posture Detection *{C++, Convolutional Neural Networks (CNN)}* Apr 2021 - May 2021

- Detected whether a person is sleeping, standing, walking or jumping using 3-axis accelerometer and convolutional neural networks on low power Arduino nano 33 BLE micro-controller.

Accident Detection For Elderly *{C, nesC}* Mar 2021 - May 2021

- Implemented a fall detection application in TinyOS, leveraging multitasking to transmit sensor data to the base station via multihop routing, within 100ms.

Modified xv6 kernel for efficient memory management *{C}* Jan 2020 - May 2020

- Cross-complied **Linux** based xv6 operating system for **RISC-V architecture** using **QEMU**.
- Coded lazy page allocation, Copy-on-Write Fork for the operating system. Added support for user-level multi-threads & alarms, filesystem, **UDP** network sockets and device driver to the OS.

Custom Linux Shell *{C}* Nov 2019 - Jan 2020

- Wrote native **linux** commands from scratch like ls, pwd, cd, rm using system calls.

Secure Encryption using ARM TrustZone Secure Boot Technology *{C++}* Oct 2019 - Nov 2019

- Programmed Xilinx Zynq 7000 FPGA to use 256-bit AES encryption engine to encrypt and decrypt input string using **ARM TrustZone Secure Boot**.

Smart Wheel Chair *{C, Altium, Proteus}* Mar 2017 - May 2017

- Designed a wheelchair capable of carrying up to 80kg, featuring bidirectional motor control and speed regulation using a MOSFET-based driver, with wireless operation via mobile and HTTP protocols.

Skills

Programming Languages:	**Embedded C**, **C++**, **Python**, **bash**, **Matlab**, Simulink
Operating Systems:	**Linux**, **Embedded Linux**, **FreeRTOS**, uCosII
Micro-controllers:	Infineon Triboard TC389, TI's TMS570, MSP430, **ARM** Cortex M3
Instruments & Tools:	**Oscilloscope**, **Logic analyzer**, **JTAG**, PCAN explorer, gdb, Segger J-Link
Documentation & Compliance:	Doxygen, JIRA, Jama, **ISO26262**, **AUTOSAR**, Misra C/C++, Git
Communication Protocols:	**SPI**, **I2C**, **CAN**, CAN-J1939, **UART**, HTTP, REST API
Machine Learning Frameworks:	Tensorflow, YOLO v9, FaceNet512
Web Development:	Javascript, Node.js, Nginx, Let's Encrypt, tailwindCSS, React