SHRUTI PARAB

| +1(413)-275-2404 | shrutiajitpa@umass.edu | LinkedIn | GitHub | Embedded Systems Engineer |

Detail-oriented embedded systems engineer specializing in firmware design, embedded Linux, and hardware-software integration – passionate about developing efficient and scalable embedded solutions.

TECHNICAL SKILLS

Languages: Python, Embedded C, C/C++, Java (basic), Verilog (basic)
Hardware: Raspberry Pi, Arduino, Orange Pi
Tools and Platforms: Git/GitHub, Node.js, IntelliJ, KiCAD, Arduino IDE, MQTT, Linux, Oracle VM, Cadence, JTAG, RTOS, Device Drivers, SPI, I2C, UART, USB, debugging, TCP, UDP, Bluetooth (BLE), WLAN, IP, Bare-metal programming.

WORK EXPERIENCE

Play Time Media Pvt Ltd **Mumbai, India**
Hardware and Embedded C Engineer July 2022 - June 2023

- Designed and extended parking solution prototypes using C++ and Python, integrating a variety of sensors, MCUs, Ethernet, and modules, while developing detailed circuit schematics for scalable and maintainable implementations.
- Optimized product design through efficient hardware-software integration and containerized development using Docker, resulting in a 95% reduction in manufacturing cost while maintaining high-quality standards.
- Derived and standardized best practices for deployment and preventive maintenance of existing installations.
- Worked closely with vendor partners to deliver high-quality prototypes, leading to 98% improvements in production efficiency and cost savings for the business. Trained support engineers in installation and deployment procedures using version control.

TCR Innovation **Mumbai, India**
Embedded Software Engineer June 2021 - August 2021

- Enhanced library operations by creating a user-friendly Library Management System with NetBeans (GUI) and SQL, leading to a 15% decrease in lost books and expanded inventory management.
- Engineered a Java and SQL-based system, resulting in a 10% decrease in errors and attained accuracy for the organization.

PROJECTS

Smart Ticket Dispenser

- Developed an intuitive interface for a ticket dispensing machine powered by **Raspberry Pi**, optimizing parking ticket printing efficiency by **90%** without requiring staff assistance
- Integrated **RFID MFRC522** for parking pass authentication and implemented multi-mode entry with **FASTag** and real-time parking spot display.
- Implemented a user-friendly multi-window interface, leading to a significant reduction in staff employment by up to **75%**.

Multilevel Spot Indicator

- Designed a system to indicate spot availability for a multilevel parking area with 6 levels controlled by Arduino Nano and Ethernet module synchronized with 24 Arduino Uno Loop detector nodes for real-time vehicle detection.
- Implemented an MQTT-based server for seamless transfer of messages and dynamic spot updates from 6 levels.

IoT-based Implementation of Air Monitoring and Purification System

- Built a system using ESP32 as the main controller and multiple environmental sensors for real-time pollutant detection and control
- Integrated cloud-based data storage for continuous monitoring and analysis, activating the HEPA filtration and buzzer alerts when threshold levels were exceeded, reducing pollutants by up to 95%.

EDUCATION

University Of Massachusetts, Amherst **Amherst, MA**
MS in Electrical and Computer Engineering September 2023 - May 2025
University Of Mumbai **Mumbai, India**
B. Tech in Electronics Engineering June 2018 - May 2022

PUBLICATIONS

- "IoT-based Implementation of Air Monitoring and Purification System" in ICFEMS-2022