

Jatan J. Pandya

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SUMMARY

Software engineer with experience in engineering consultancy, delivering full-stack applications, C/C++ firmware, and scalable AWS cloud architectures. Successfully led 6+ product development projects from prototype to production across consumer, IoT, and medical domains. Proven track record in both autonomous and collaborative environments, contributing to innovative projects that have won multiple competitions.

EDUCATION

University of Massachusetts Amherst

09/2023

Bachelor of Science, Computer Engineering

- Clubs: Vice President of Institute of Electrical and Electronics Engineers (IEEE) UMass Amherst Chapter
- Awards: \$14,000 Chancellors Award
- Selected Coursework: Data Structures, Algorithms, Databases, Network Programming (TCP/IP), Embedded Systems

Bachelor of Science, Computational Linguistics

SKILLS

- **Programming Languages:** C/C++, Python, JavaScript, Java
- **Software Development:** Linux OS, bash, Git, Object-Oriented Design (OO), Agile Development
- **Full Stack:** Amazon Web Services, Flask, Bootstrap, PostgreSQL, REST API
- **Embedded Development:** Microchip SAM, STM32, FreeRTOS, I2C, SPI, UART, CAN, Logic Analyzer, Oscilloscope

WORK EXPERIENCE

QuireTech Engineering Consultants LLC

Cresskill, NJ, USA

Software Developer

09/2023 – Present

Software Engineering:

- Developed C firmware for a consumer facial skin micro-needling therapy device, successfully delivering a robust solution that is currently in mass production, within 7 weeks of prototyping phase.
- Engineered a real-time, event-driven, low-latency firmware on an ARM-Cortex based microcontroller, capable of handling multiple peripherals like buttons, rechargeable battery, motor, and LEDs, providing a seamless UX for customers.
- Designed a power-efficient battery management algorithm utilizing sleep and idle modes, reducing power consumption by 80% and extending device operation time to 12+ hours on a single charge.

Full Stack Development:

- Deployed a scalable AWS architecture for a reusable cup IoT bin prototype, aimed at eliminating single-use plastic cups at large-scale outdoor events and in coffee chains.
- Designed infrastructure for uplink, downlink data exchange and storage across 30 AWS Sidewalk-enabled bins within a 0.25-mile radius, facilitating transfer of both on-site user-generated and remote over-the-air (OTA) update data.
- Implemented fault-tolerant firmware in C using the ESP-IDF framework, ensuring reliable AWS IoT Core connectivity via local Wi-Fi in regions without AWS Sidewalk support and as a backup during gateway failures.
- Developed a fleet management dashboard using ReactJS, Flask, and AWS (DynamoDB, Amplify, Cognito), providing access to device health, status, GPS, and other telemetry data.

Software Development:

- Conceived an Electrocardiogram (EKG) simulator device for a medical client, enabling sales associates to effectively demonstrate their state-of-the-art cardiac monitor product at conferences and sales pitches.
- Devised a web application with a C++ backend and HTML/CSS/JS frontend, featuring a local web server for file management and custom dataset uploads, allowing associates to upload new on-site, improving flexibility.
- Upgraded RPi-based prototype to ESP32, reducing per unit cost by 93.33% while enhancing the capabilities of the unit.

PROJECTS

CardVerse – An Automated Magic: The Gathering Card Authentication and Sorting System

Amherst, MA, USA

Software Engineer

09/2022 – 05/2023

- Built a fully automated MTG card inventory solution, using machine learning, image processing, and mechatronics, a unique system without comparable solution in the market.
- Implemented a multi-state system software architecture in Python, integrating Nvidia Jetson and Raspberry Pi to control a 3-axis robotic arm, 2 cameras, weighing scale, and a lighting chamber, enabling precise card handling and examination.
- Designed a machine learning pipeline using YOLOv8 to label, annotate, and train a custom card dataset, achieving 97% accuracy in detecting scratches, bends, and dents and other artifacts on cards.
- Implemented image processing and pattern matching algorithms using Python (OpenCV, numpy) replicating industry-standard card authentication tests and achieving 99% accuracy on unseen cards.
- Secured \$7,000 in prize money at the UMass 2022-2023 Innovation Challenge, an inter-collegiate competition with 10+ teams.