Jatan J. Pandya

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Software Engineer with 1+ year of experience developing C/C++ software, full stack apps and scalable AWS architectures

EDUCATION

University of Massachusetts, Amherst *Amherst, MA*
Bachelor of Science in **Computer Engineering** *Graduated 09/2023*
Bachelor of Science in **Computational Linguistics** *Graduated 09/2023*
Relevant Coursework: Data Structures and Algorithms (Design and Complexity Analysis), Network Programming, Machine Learning, Natural Language Processing, Probability and Statistics
President of UMass IEEE Student Chapter
Research Assistant at Cognitive Science of Language Lab
Recipient of **Chancellors Award** ***$14,000 Annually***

WORK EXPERIENCE

QuireTech Engineering Consultants LLC *Cresskill, NJ*
Software Engineer *08/2023 - Present*

- **Firmware Development:**
  - Developed **C firmware** for a **medical micro-needling device** used in facial skin rejuvenation therapy, successfully delivering a robust software that is now in production for consumer purchase.
  - Engineered **real-time, low-latency** firmware for a **Microchip SAM ARM-Cortex** computer architecture-based **microcontroller**, integrating motors, buttons, a rechargeable battery, and LEDs for seamless operation.
  - Implemented **battery management algorithms** with sleep and idle modes, **reducing** power **consumption** by **80%** and extending battery life to over **12 hours** on a single charge.
- **Full Stack & Cloud Infrastructure:**
  - Engineered a **scalable AWS architecture** for a **smart reusable cup bin prototype** for a **startup**, aimed at **reducing single-use plastic cups** at large-scale outdoor events.
  - Designed infrastructure for uplink and downlink data exchange across **30 AWS Sidewalk** enabled bins within a **0.25-mile radius,** facilitating transfer of both user-generated and over-the-air upgrade data.
  - Implemented a **fault-tolerant software** in **C** using ESP-IDF to automatically connect to local Wi-Fi network during gateway failures, ensuring **backup connectivity to AWS IoT Core**.
  - Developed a **fleet management dashboard** using **ReactJS, Flask,** and **DynamoDB**, providing access to device health, status, GPS, and other **telemetry** data**.**
- **Software Development:**
  - Conceived an **EKG simulator device** for a **medical client**, empowering sales associates to effectively demonstrate their **state-of-the-art cardiac monitor** at conferences and **sales pitches.**
  - **Upgraded** a legacy Raspberry Pi-based prototype to ESP32, **reducing per unit cost** by **93.33%** while enhancing the capabilities of the unit.
  - Devised a **web application** with a **C++ backend**, featuring a local **webserver** for file management and supporting custom dataset **uploads** to improve flexibility and user control.

PROJECTS

CardVerse - $7000 Innovation Competition **Winner** *Project Portfolio: jatanjay.github.io/CardVerse*

- Built a **machine** for **authenticating**, and **sorting 1000 Magic: The Gathering cards**, streamlining inventory management for professional collectors.
- Designed a **machine learning algorithm** to identify card **defects** with **97% accuracy**, effectively recognizing **scratches**, **bends**, and **dents**.
- Implemented a **computer vision pipeline** by **labeling**, **annotating**, and **training** custom dataset using **YOLOv8**, achieving **99% authentication accuracy** on industry-standard tests.
- Leveraged **Nvidia Jetson** and RPi, to integrate a **3-axis robotic arm**, **cameras**, a **weighing scale** and a **lighting chamber** enabling precise card handling and examination.
- Won a total of **$7000 prize money** at UMass 2022-2023 **Innovation Competition.**

SKILLS

Programming Languages: C/C++, Python (PyTorch, scikit-learn, pandas, NumPy), JavaScript
Full Stack & Cloud Services: Amazon Web Services (IoT Core, DynamoDB, S3, Lambda, Amplify), PostgreSQL, REST
Software Development: Linux OS, bash, Git, Object-Oriented Design, Agile Development
Embedded Development: Microchip SAM, STM32, FreeRTOS, I2C, SPI, UART, CAN, Logic Analyzer, Oscilloscope