ALEXANDROS DRIVAS

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TECHNICAL SKILLS

- **Hardware & Embedded Systems Design:** Embedded C, ARM-based microcontrollers, ESP-32, RPi, Linux, CAD (Fusion 360, Autodesk Inventor, AutoCAD), PCBA design, circuit design, 3D FDM/metal printing, CNC machining, BLE, GPIO, PWM, I2C, UART
- **Process & Manufacturing Optimization:** Automation**,** scaling electro-mechanical systems, human-centric manufacturing processes
- **Languages & Frameworks:** Python, C, JavaScript, React, Typescript, Tailwind CSS, Flask, SQL, Bash, CI/CD infrastructure
- **Testing & Validation:** ISO 9001/13485, MDSAP, IQ, OQ, PQ, DVT, FDA Class II validation, 510(k) documentation

WORK EXPERIENCE

Commure | Lead Hardware & Firmware Engineer Series F, backed by General Catalyst | Jan 2023 – May 2025

Medical Device Development & Engineering

- Applied design for manufacturability and parallel hardware-firmware development to accelerate development of an ML-enabled Class II hematological device for oncology and neutropenia, contributing to $9M in revenue.
- Led design and execution of Corrective Actions (CAPA), delivering quality and cost-down improvements across the product suite.
- Architected embedded C/Python firmware on ARM microcontrollers for drivers and sensors in an embedded Linux-based medical device reducing blood test execution latency by 18% and lowering BOM costs by 13%.
- Design and execute Design Failure Mode and Effects Analysis (DFMEA) for both electrical and mechanical components.
- Define, validate, and improve subsystem requirements and specification throughout the product development lifecycle.
- Rapidly designed and fabricated medical device components, test, and assembly fixtures for Class II devices, including CAD models, assemblies, and detailed engineering drawings compliant with ASME standards.

Manufacturing & Process Optimization

- Directed failure analysis of all returned units (RMA) and manufacturing test failures; identified root causes and implemented corrective actions via CAPA/ECO/MCO/SCO, improving product reliability and reducing rework rate.
- Led design transfer to manufacturing and optimized assembly workflows issuing MPI/SOP and reducing build time by 43%.
- Owned hardware BOM; partnered with global suppliers and contract manufacturers to scale production capacity, issue SCOs, reduce costs, and maintain compliance with manufacturing standards and supplier agreements.
- Developed automated Accelerated lifecycle testing (ALT) tools (Python/Bash) to streamline validation of sensors, PCBs, and subassemblies for high-volume production (injection molding), identifying failure modes and boosting product yield by 18%.

Project Management & Regulatory Compliance

- Managed cross-functional teams across engineering, manufacturing, and regulatory testing to deliver a Class II medical device revision, owning hardware and firmware development on a tight 6-month timeline, ensuring ISO 9001/13485/MDSAP compliance.
- Led design and execution of verification & validation protocols and tests, authoring reports in accordance with ISO 13485.
- Spearheaded medical device reliability testing to ensure hardware exceeds ISO 9001/13485 and MDSAP quality compliance.
- Developed firmware for R&D-stage ML analyte detection devices; executed IQ/OQ/PQ, developed Electromagnetic Compatibility (EMC) requirements, authored technical documentation, and submitted a 510(k) application per ISO 13485.

Embedded Systems & Software Development

- Designed and implemented embedded systems demonstrating QC and device reliability through testing statistical analysis.
- Created diagnostic tooling (SQL/JS) enabling real-time monitoring and root cause analysis for 3,000+ deployed units
- Improved QC pass rates 13% by optimizing computer vision models (OpenCV classifiers) to reduce test strip misalignment failures.
- Debugged and enhanced electronic quality control firmware, resolving in-field failures and increasing pass rates by 12%.
- Built secure, GCP-hosted web dashboard (React/Flask/Postgres) for clinical trials, ensuring PHI-compliant telemetry and enabling real-time insight delivery to trial investigators.

Athelas | Hardware Engineer Intern Series D, Y Combinator-backed | May 2022 – Aug 2022

- Hardware automation for test strip manufacturing of Class II medical devices, including ARM-based firmware, drivers, motors, linear actuators, custom PCBs, power delivery, and a user control interface, boosting throughput by 22% and yield by 18%.

HARDWARE & EMBEDDED SYSTEMS PROJECTS

Luluthi | Founder & Technical Lead (IoT + plant monitoring) Apr 2025 – Present

- Designed and deployed a distributed IoT sensor platform with BLE/Wi-Fi data transmission, adaptive sampling, and power-efficient sleep cycles, delivering robust physiological signal acquisition across 30+ custom sensing devices (ESP-32) and linux gateways.

Columbia University | Lead Engineer - Wearable BLE Cardiac Pacemaker Jan 2022 - Jan 2023

- Engineered sensing and stimulation circuitry for a wearable cardiac pacemaker, developing C firmware for real-time BLE battery monitoring and ensuring low-noise, high-resolution signal collection, validating performance via benchtop and in-animal testing.

EDUCATION

Columbia University | May 2024
M.S. in Biomedical Engineering

Chapman University | May 2021
B.S. in Biochemistry & Molecular Biology, Minor in Biophysics