Michael **Mahan**

Product Owner · Embedded & IoT Systems · Computer Appreciator

Austin, Texas

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Summary

Product owner and technical lead for an internal operations platform serving an IoT fleet of 13,000+ sensors, setting product direction and architecture while staying hands-on from firmware and field diagnosis to cloud integrations. Previously the sole firmware engineer at a YC-backed medical-device startup, taking a connected device from prototype into production.

Work Experience

Polygon US

Austin, Texas

IoT Solutions Engineer | Product Owner, Internal Operations Platform

June 2024 - Present

- Own architecture, data modeling, and feature prioritization for the internal operations platform serving 13,000+ sensors, accountable to the Operations Director; run sprint planning and direct a second developer.
- Lead implementation, release documentation, and CI/CD across test, staging, and production; co-lead communication with operations users and maintain the US how-to catalog for supported devices.
- Initiated and led a fleet-wide inventory reconciliation, aligning billing and operations teams' separate records on a single source of truth; audited 5,836 records across 14 device populations and drove correction of ~400, with remediation ongoing.
- Cut asset-registration time for batches of 50 industrial HVAC units from about 4 hours to 2 minutes with a security-approved Python tool that remains in active use.
- Architected an AWS Lambda–based monthly billing pipeline that consolidates device inventory, customer associations, cellular usage, and exceptions into auditable reports with automated archival and dashboard distribution.
- Designed an event-driven ERP integration broker on Lambda, DynamoDB, and EventBridge, and eliminated a synchronous third-party API bottleneck in bulk sensor provisioning by decoupling provisioning from ERP enrichment.
- Cut 3D-model turnaround for external contractors from 3 weeks to 2 days by rebuilding a legacy PHP renderer as a standalone application.
- Own US R&D projects, including Modbus integration work with US operations; contribute to smart-controller firmware and integrations across LoRaWAN, LTE, BLE, Wi-Fi, Ethernet, and RS-485; travel to field operations centers to diagnose hardware, connectivity, and firmware failures.

Starling (YC W22)

Houston, Texas

Firmware Engineer

November 2022 - December 2023

- As sole firmware engineer, owned a connected medical device's firmware from prototype through the first 160 production units.
- Achieved a six-month battery-life target through firmware power profiling and optimization.
- Built pilot-device inventory and failure-analysis workflows that reduced LTE connectivity failures by 48%.
- Engineered Bluetooth Low Energy (BLE) services for communication with mobile apps.
- Redesigned AWS IoT Core certificate provisioning and fleet identity management, avoiding more than $5,000 in annual costs.
- Extended a Zephyr driver from the sensor datasheet, increasing supported sensor functionality from 60% to 100%.

SLB (formerly Schlumberger)

Houston, Texas

Data & Infrastructure Engineer

June 2022 - November 2022

- Supported international users of enterprise data-management software, triaging issues and coordinating fixes across specialist teams.
- Developed Dataiku API endpoints for ETL workflows and machine-learning model queries.

United States Air Force / Louisiana Tech Research Institute (LTRI)

Ruston, Louisiana

Graduate Fellow

June 2020 - May 2021

- Co-led development of a multi-module digital twin integrating AFSIM and VOACAP that projected real-world system state five minutes ahead.
- Set up project management and onboarding for four undergraduate developers, including programming and code-quality workshops.
- Reverse-engineered an existing C++ system and developed Python/MongoDB tooling to ingest VOACAP propagation data and resolve nearest viable-signal locations.

Business Alliance Financial Services (BAFS)

Ruston, Louisiana

Software Engineer

November 2017 - March 2020

- Contributed to the initial three-year development of BLAST, BAFS's proprietary commercial lending platform, supporting servicing workflows for 250+ business clients.
- Built Python monitoring and alerting for nightly database processing.
- Expanded ETL and filtering APIs and implemented React-based web interfaces.

Fenway Group *Ruston, Louisiana*

Associate Consultant *April 2017 - November 2017*

- Built Splunk dashboards and error-detection heuristics for a healthcare platform serving 120,000+ users.
- Developed Actian DataConnect and SQL ETL workflows to support new data-compliance requirements.

Projects

Pantheon — From-scratch orchestration layer for AI *GitHub: Pantheon-config*

Sole Human Lead *April 2026 - Present*

- Building an orchestration and governance layer that coordinates LLM agent harnesses across development and research workflows, keeping tickets, decisions, and incidents on an auditable record.
- Applied Beer's Viable System Model, a management-cybernetics theory of organization, to govern the agent fleet, defining the roles, escalation paths, and policies through which AI agents coordinate under one human setting direction.
- Runs persistently across host reboots, preserving work, operating context, and persona continuity as individual model sessions are replaced; in daily operation for 170+ days.
- Converts incidents into monitors and recovery policy; a repeated session-failure class that originally went undetected for 22 hours later self-recovered in 16 seconds.

Echo Prismatic — Voice demux middleware *GitHub: echo-prismatic*

Sole Human Lead *March 2026 - Present*

- Architected and directed a voice middleware system built by AI agents, steering its 134-page specification, reviewing all agent output, and keeping final authority over architecture and engineering decisions.
- The live system turns raw audio into typed MQTT conversational events through voice-activity detection, streaming transcription, speaker identification, and LLM address classification, each stage a swappable adapter on its own tap.
- Voice output runs on streaming TTS with acoustic echo cancellation and stops when the user talks over it.

Skills

Embedded & Connectivity	Zephyr RTOS, Embedded C, C++, Nordic nRF91/nRF52, BLE, LTE-M/NB-IoT, LoRaWAN, Modbus, RS-485, UART, I2C, SPI, Device Drivers
Systems & Cloud	Python, TypeScript, Node.js, Linux, AWS Lambda, AWS IoT Core, DynamoDB, SQL, Docker, MQTT, REST APIs
Platform & Frontend	ThingsBoard, JavaScript, HTML/CSS

Education

Louisiana Tech University *Ruston, Louisiana*

M.S. in Computer Science *August 2020 - May 2022*

- Thesis: *Exploring Ransomware on the Oculus Quest 2.* Showed that a standalone VR headset's attack surface supports full ransomware execution; hand-tested 90+ samples across 10 Android ransomware families on-device, with SRS, a Kotlin proof-of-concept built from a derived definition of ransomware, as the control.

Louisiana Tech University *Ruston, Louisiana*

B.S. in Computer Science *August 2014 - March 2020*

- Received Presidential Scholarship.

Honors

2021 **Letter of Acknowledgement, NC3 Model & Simulation Fellowship,** Air Force Global Strike Command (AFGSC)

2014 **Eagle Scout,** Boy Scouts of America