

# Joshua Lunn

## Principal Embedded Engineer - Embedded Engineering Manager

Billings, MT

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### PROFESSIONAL SUMMARY

Embedded software engineer and technical leader with 19+ years of experience delivering production firmware and embedded Linux platforms across defense, IoT, and consumer electronics. Proven track record building and scaling cross-functional engineering teams (up to 10 engineers, \$3M+ revenue) while staying hands-on with board bring-up, sensor integration, and edge AI. Adept at driving products from prototype through volume manufacturing with ODM partners.

### TECHNICAL SKILLS

**Languages:** C, C++, Python, Java, Objective-C, Shell/Bash

**Embedded Platforms:** Embedded Linux, Buildroot, Yocto, U-Boot, Linux Kernel, Device Tree, BSP Development, FreeRTOS, Nucleus RTOS, STM32, i.MX6, ESP32, ARM, RISC-V

**Protocols & Interfaces:** I2C, SPI, UART, USB, JTAG, BLE, LoRa, LoRaWAN, WiFi, Cellular, Sub-GHz, Mesh Networking, MQTT

**AI/ML & Vision:** Edge AI, Object Detection, YOLOv8, OpenCV, PyTorch, LangChain, ChromaDB, XGBoost, ISP Tuning, GStreamer, Video Encoding

**Cloud & IoT:** AWS IoT Core, MQTT, eSIM/LPA, OTA Updates, Device Provisioning

**Tools & Practices:** Git, CI/CD, Code Review, Agile/Scrum, Schematic Review, Board Bring-Up, JTAG/SWD Debugging, ODM Coordination

**Leadership:** Engineering Team Management (10+), Cross-Functional Leadership, SBIR/DoD Contract Execution, Hiring & Mentoring, Process Design

### PROFESSIONAL EXPERIENCE

#### Tactacam

Billings, MT · Feb 2024 – Present

##### Engineering Manager, Embedded Software

Camera company building battery-operated cellular and WiFi cameras for hunting, surveillance, and wildlife monitoring.

- Managing a team of embedded software engineers delivering firmware across multiple simultaneous new product introductions (NPIs).
- Pioneered a fully agentic development process with hardware-in-the-loop, building a custom agent harness with dedicated AI agents for embedded software development, automated testing, and code review.

##### Principal Embedded Engineer - Feb 2024 – Mar 2026

- Architected a portable embedded Linux platform enabling rapid SoC migration across product lines, reducing bring-up time for new hardware.
- Introduced edge AI object-detection models that reduced false cellular triggers and lowered per-device network costs while improving customer experience.
- Led ISP tuning and video-encoder pipeline investigations to improve image/video quality and reduce bandwidth.
- Implemented the IoT connectivity stack: AWS IoT Core (MQTT), eSIM LPA provisioning, and automatic carrier selection for multi-carrier deployments.
- Created a custom fast boot process achieving sub-300ms cold boot to full-resolution image capture.
- Developed a custom low-light auto-exposure algorithm leveraging frame sync and IR PWM control for proper night-time exposure.
- Provided firmware oversight for ODM partners, including code review, defect triage, and acceptance testing for volume manufacturing.

#### CSLabs

Alexandria, VA · Jul 2022 – Feb 2024

##### Lead Software Engineer

Modeling and simulation company specializing in ML, sensors, and physics-based analysis.

- Built an automated video-analysis pipeline using OpenCV and YOLOv8, correlating multi-stream events and feeding contour data into an XGBoost regression model.
- Developed an LLM-powered multimodality classification and similarity search application.
- Managed multiple SBIR contracts totaling \$2M+ as project manager and lead software engineer.
- Recruited to establish product-development best practices, grow the software team, and introduce OPSEC processes.

## **Kopis Mobile** **Director of Engineering**

Flowood, MS · Jan 2013 – Jun 2022

Defense-focused start-up providing software and rugged electronics to support national security.

- Grew and led a cross-functional team of 10 software, electrical, computer, and mechanical engineers executing on \$3M+ annual contract revenue.
- Unified the team around a Scrum-based process aligned to simultaneous multi-project delivery.
- Built a culture of high trust and psychological safety through regular 1-on-1s and retrospectives.
- Established a UI/UX function to build simple, intuitive interfaces for complex defense solutions.

### **Engineering Manager – Software · Jan 2017 – Oct 2017**

- Scaled team from 2 to 5 engineers executing on \$2M+ in contracts plus internal R&D.
- Implemented unified branching model, unit testing, code reviews, and CI/CD to increase velocity.
- Created a co-op program that became a reliable pipeline for recruiting top engineering talent.

### **Software Engineer / Co-Founder · Jan 2013 – Dec 2016**

- Developed a man-wearable embedded Linux device that captured and streamed first-person video over a WiFi mesh network.
- Created a rugged wireless dongle for real-time CBRNE sensor readings.
- Designed a custom sub-GHz mesh protocol for synchronized helmet-mounted multi-spectrum light emitters.
- Shipped multiple Android and iOS applications for military users, including a sniper ballistic calculator and BLE control apps.

## **Mav6**

Vicksburg, MS · May 2012 – Dec 2012

### **Software Developer**

- Delivered a Java geospatial application for RF propagation modeling on the NASA WorldWind platform.
- Transitioned to firmware development for a prototype metal detector, demonstrating rapid cross-domain adaptability.

## **Heartland Micropayments** **Intermediate Firmware Engineer**

Chattanooga, TN · May 2011 – May 2012

- Developed firmware for AT89C51 and STM32F processors; performed on-site upgrades, installs, and troubleshooting.
- Redesigned a legacy system to improve supportability and customer satisfaction.

## **SmartSynch Inc** **Senior Firmware Engineer**

Jackson, MS · Jan 2008 – Feb 2010

Cellular-enabled smart electric meters for utility smart grid deployments.

- Developed firmware (C, Nucleus RTOS) for 250K+ fielded devices designed for 20+ year operational life.
- Reduced BoM cost by ~\$50 per GSM unit by porting firmware to support a lower-cost cellular modem.
- Cut auto-provisioning timeline from months to weeks by unifying the firmware code base across all products.

## **EDUCATION, CERTIFICATIONS & COMMUNITY**

### **Bachelor of Science, Electrical Engineering**

Mississippi State University, Starkville, MS

Senior design: prototype of one of the first cellular-enabled security cameras.

- Remote Pilot Certificate – FAA-Certified Drone Pilot
- Tan, J., Cao, Z., Carlson, L., Barbieri, L., & Lunn, J. (2015). Modeling and Analysis of RF Propagation in Complex Environments.

### **Community & Mentorship**

- Mentor – Jackson State University UNITE Summer Camp & FIRST Tech Challenge
- Coached a FIRST Tech Challenge team to a World Championship appearance.