Sajad Ghorbani 0739369296
Senior Embedded Systems Engineer info@sajad.se

Profile

Senior embedded systems engineer with a practical, hands-on approach to building reliable products end-to-end. Blends firmware, hardware, sensing, data analysis, and test automation into complete solutions that work in real-world conditions. Driven by curiosity, simplicity, and understanding how systems behave from the first prototype to mass deployment. Mentor, hardware hacker, and outdoor enthusiast who enjoys sharing knowledge, exploring electronics, and understanding the physical world through measurement and experimentation.

Technical Strengths

- Embedded firmware in C with strong bare-metal background and Zephyr/RTOS
- STM32, EFR32, ESP32, Atmel, nRF, bring-up, driver development, low-level debugging
- Ultra low-power sensor integration: accelerometers, barometers, RFID, NFC
- Deep expertise in low-power measurement, optimization, and long-life battery design
- Hardware prototyping, schematic review, PCB insight, and advanced component selection, leakage behavior, temperature drift, and ultra-low-power device technologies
- Secure bootloaders & FUOTA (AES-GCM, dual-bank update, custom lightweight protocols)
- Python/JS tooling for data analysis, calibration, diagnostics, visualization, and internal debugging tools
- CI/CD for embedded workflows, automated builds, testing, and firmware delivery
- Architecture design with clean abstraction layers for MCU-independent application logic
- Wireless communication: NB-IoT (custom UDP/PSM), LoRaWAN (Class A), BLE
- PCB Tools: Altium, EasyEda, KiCad
- Lab Tools: Oscilloscope, logic analyzer, signal generator, VNA, power profilers

Professional Experience

Senior Embedded Systems Engineer
Bintel AB, Lund, Sweden · 2019–Present

Products: NB-IoT/LoRaWAN Level/Slider Sensor,BLE-based Gateway and Sensor Platform
Deployment: 15,000+ IoT units in field operation (outdoor industrial environments)

Responsibilities:.Developed and implemented low-level C firmware for STM32 and EFR32 systems. Designed a secure custom bootloader with AES-GCM encryption and staged dual-bank FUOTA over NB-IoT (UDP). Integrated an NB-IoT communication stack with an ultra-low-power, custom lightweight UDP protocol optimized for 10+ years of battery life. Implemented LoRaWAN Class A devices using a custom payload and precise timing. Developed energy-efficient BLE gateway and node firmware with a connectionless half-duplex method. Contributed to hardware design and component selection. Built production tooling, including pogo-pin test jigs, automated serial provisioning, test routines, and Python-based functional tests. Designed burn-in systems and quality-monitoring infrastructure for manufacturing and reliability evaluation.

Key Results: Extended device battery life to over 10 years. Reduced production test time per unit by 150% through automation. Delivered robust firmware and test infrastructure enabling scalable manufacturing and deployment.

Freelance Embedded Systems Engineer
Concept-to-Prototype Development 2018–2019

Summary: Specialized in transforming non-technical business ideas into functional IoT prototypes and proof-of-concept systems. Converted abstract product requirements from small companies into complete working solutions spanning hardware design, embedded firmware, RF integration, and PC-based tools for control, monitoring, and data visualization. Supported clients from initial concept through fully functional prototypes suitable for internal testing, investor demonstrations, and early pilot deployments—bridging the gap between raw ideas and practical, deployable IoT technology.

Embedded Systems Engineer
1001 Company, Hamedan, Iran 2011–2017

Products: Variable-Message Signs (VMS) for pricing displays and traffic information systems over SMS/GSM/2G/3G/Wi-Fi communication.

Responsibilities: Worked as a full-cycle hardware/firmware engineer, designing complete electronic systems for large-scale VMS products. Delivered schematic design, PCB development, embedded firmware, PC-side tools, and web applications. As the company expanded, the role evolved into technical leadership, system architecture planning, and oversight of hardware and firmware development. Defined engineering priorities, led technical decisions, designed electronic hardware and system architecture, developed firmware and requirements, performed hardware/software integration and troubleshooting, built PC-side communication tools, implemented Bluetooth and serial interfaces, developed web applications and APIs for remote control and monitoring, and managed documentation, validation, and product testing.

Education

Bachelor’s Degree in Electronics Engineering, University of Science and Culture, Hamedan, Iran (2007–2011)

Patent

Transferring Data Between Mass Storage Devices Without a Computer
Patent No. IR 78902 (Filed October 2012)

Interests & Personal Notes

I enjoy hardware hacking, system teardown analysis, photography, and hiking. Passionate about mentoring younger engineers and helping juniors grow into confident engineers and simplifying complex technical problems into clean, practical designs.