Farshad Darani

Embedded Systems Engineer | Full-Stack IoT Developer

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SUMMARY

Embedded Systems & Software Engineer with expertise in **IoT architecture, real-time firmware, automotive diagnostics**, and cloud-connected mobile applications. Strong background in C/C++ development for ARM/STM32 platforms and full-stack application engineering. Founder of **ATFA**, a connected vehicle diagnostics startup delivering an intelligent mobile app integrated with hardware sensors. Skilled at bridging hardware data acquisition with cloud analytics, scalable backends, and mobile UI systems.

TECHNICAL SKILLS

Embedded Firmware: C, C++ (C++14/17), Embedded C, Python, ARM Cortex-M (STM32), AVR, ESP32, RTOS Concepts, DMA, Interrupts, State Machines.

Protocols & Comms: CAN Bus / J1939, UART, I2C, SPI, MQTT, Bluetooth Low Energy (BLE), WebSockets, OBD-II (ELM327).

Hardware Validation: Logic Analyzer, Oscilloscope, **LabVIEW (HIL Testing)**, PyTest, Signal Processing (Kalman Filters).

Full-Stack & DevOps: Node.js, Express.js, REST APIs, MySQL, Docker, Git, Linux, CI/CD Pipelines, NGINX.

PROFESSIONAL EXPERIENCE

Co-Founder & Lead Engineer   2024 – Present
ATFA (Automotive Diagnostic Startup) – Vancouver, BC
www.atfagildar.ca

- Architecting an intelligent **mobile application** for automotive diagnostics, integrating OBD-II data with cloud-backed analytics.
- Designed real-time firmware-inspired logic to parse vehicle parameters (RPM, Speed, Coolant Temp, O2 values) using **Bluetooth (ELM327)** modules.
- Developed state-machine algorithms for buffering, error detection, reconnect logic, and stable BLE communication pipelines.
- Built full testing workflows for validating ISO 15765-4 (CAN) communication reliability across multiple vehicle models.
- Implemented diagnostic data visualization, fault highlighting, and performance interpretation logic inside the mobile app UI.

Full-Stack Engineer (Contract)   2024 – Present
Self-Employed – Vancouver, BC

- **DeedDraw.com:** Architected a large-scale rewards platform for real estate professionals.
  - Backend engineered using Node.js, Express.js, and MySQL with optimized connection pooling.
  - Implemented full authentication stack: bcrypt hashing, secure tokens, email verification, rate limiting, and anti-abuse rules.
  - Designed multi-layered reward engine with transactional integrity, audit logging, and admin dashboards.
  - Integrated PDF generation (jsPDF), SMTP workflows (Nodemailer), and secure session management.
  - Deployed on Linux VPS using **NGINX reverse proxy**, PM2, firewall rules, SSL/TLS, and monitoring tools.

- **BookMorePro.com:** Developed an automated marketing & funnel optimization system.
  - Engineered lead ingestion pipelines, tracking rules, and data-scoring logic.
  - Built responsive dashboards with real-time statistics, conversion analytics, and CRM-like filtering.
  - Optimized MySQL queries and caching layers for high read/write performance.

- **DejaVuHomeRemodeling.com:** Built a high-performance website ranking #1 via Google Ads in a competitive California niche.
  - Engineered ultra-fast landing pages with custom CSS, animations, and SEO-enhanced structure.

– Integrated analytics, event tracking, and customer funnel automation to maximize conversions.
  – Implemented secure backend forms, spam-prevention rules, and reliable hosting infrastructure.

Application Engineer 2021 – 2022
Sanat Electronic BOZORGMEHR Co. – Isfahan, Iran

- Developed embedded control systems for greenhouse automation using STM32/AVR microcontrollers.
- Implemented multi-sensor fusion and real-time environmental control loops (humidity, light, temperature).
- Performed calibration, environmental testing, and deployment across multiple greenhouse sites.

Web Developer 2018 – 2021
Avesta Co. – Isfahan, Iran

- Delivered responsive web platforms using PHP, JavaScript, and MySQL.
- Improved performance, accessibility, and SEO for multiple production websites.

SELECT ENGINEERING PROJECTS

- **STM32 Automation System:** Embedded C firmware for DHT11 acquisition, LCD interfacing, relay control, and timer-driven logic.
- **AVR Anti-Theft System:** Dual PIR sensor fusion algorithm with hysteresis and noise filtering for outdoor use.
- **Solar Tracking System:** Closed-loop LDR-based control with servo actuation to maximize solar output.
- **Compiler Prototype:** Lexical & syntax analysis engine built using C#/.NET.

EDUCATION

B.Sc. Computer Science Completed 2021
Yazd University

HONORS & INTERESTS

Awards: National Structural Design Competition (2nd Place); Provincial Chess Winner.

Interests: Chess (Professional-level), Automotive ECU Tuning, Embedded Linux, Signal Processing.