
U.S. CITIZEN

SOFTWARE AND EMBEDDED SYSTEMS ENGINEER

Embedded-systems and computer engineer with hands-on experience in firmware, robotics, autonomy, flight-software analysis, PCB design, and production system integration. Available for onsite work, relocation, travel, and internships.

Core engineering: C, C++, Rust, Python; ARM Cortex-M, STM32, bare-metal and RTOS firmware, CAN, UART, SPI, I2C, PWM; Altium PCB design and board bring-up

Autonomy and systems: ROS 2, Nav2, sensor fusion, GNSS/IMU, PX4/MAVLink, SITL/HITL, Linux, Git, Docker, Nix, systems integration and debugging

ENGINEERING EXPERIENCE

O3 Worldwide, Inc. (Huntington Beach, CA) 06/2026 – Present
Technology and Computer Engineering Consultant | Aviation, aerospace, maritime, and advanced manufacturing

- Support engineering and planning for O3's aviation, aerospace, maritime, shipbuilding, and advanced-manufacturing programs, including the O3-led, \$15 billion-plus Orlando Sanford International Airport development opportunity.
- Develop system architecture, technical workflows, software and data requirements, simulation tools, and decision-support concepts for pilot and technician training, aircraft manufacturing, distributed shipbuilding, and shipyard operations.
- Perform computer and systems engineering for blended-wing-body aircraft, unmanned aerial vehicles, unmanned surface vessels, and advanced boats and small ships, including autonomy, control systems, digital-engineering workflows, simulation integration, and requirements traceability.

Selected O3 Engineering Projects

Shipyard Operations Platform | *Rust, Python, FastAPI, PostgreSQL, React, Docker*

- Developed software for potential deployment by leading U.S. shipbuilders, connecting an ontology of parts, equipment, workers, and task dependencies to an operator interface; integrated OPC-UA adapters and OR-Tools CP-SAT scheduling.
- Implemented role-based access, event history, tamper-evident audit records, and local deployment; adapted workflows to operator feedback.

Flight-Software Static Analysis | *Rust, PX4 v1.16*

- Built a Rust analyzer for C/C++ flight software with function discovery, call extraction, MAVLink-handler lookup, and heuristic checks for authentication references, unsafe memory access, and unexpected navigation-state writes; validated behavior with 29 passing tests and a release build.
- Validated call-graph extraction and detection rules against PX4 function lookups and vulnerable-versus-corrected fixtures, producing findings for source review.

Counter-UAS Electronic-Warfare Decision Engine | *Haskell, signal processing, simulation*

- Built a replayable signal and decision pipeline using FFT and CA-CFAR detection, emitter-feature extraction, threat-library matching, constrained response selection, confidence-based abstention, and reproducible Nix environments.
- Processed synthetic and SigMF replay IQ; evaluated response plans against mission state, spectrum restrictions, and resource constraints, preserving decision evidence for adversarial simulation and replay-based debugging.

Computational Aircraft Design and Optimization | *Python, NumPy, SciPy, OpenVSP, CalculiX*

- Connected parametric geometry with aerodynamic, structural, mass, and aeroelastic analysis; screened hundreds of variants, validated three finalists with higher-fidelity tools, and identified a trade-study design with approximately 24% lower structural mass than its baseline.
- Built an event-backed validation chain across geometry and analysis handoffs, retained solver artifacts, checked outputs against published references, and flagged uncertain results for engineering review.

Hasan & Associates (Huntington Beach, CA) 06/2026 – Present
Litigation Technology and Evidence Systems Consultant | Trial and evidence preparation

- Designed tools and workflows to organize and synchronize video, images, documents, timelines, and demonstrative exhibits; created courtroom-ready multimedia presentations and applied data-processing, conversion, quality-control, and retrieval methods across large evidentiary records.

- Architected distributed real-time control for a production multi-axis motor system; implemented the CAN protocol, ARM Cortex-M node firmware, central controller, multilayer Altium PCBs, feedback, fault detection, and safe-stop behavior.
- Owned board bring-up and hardware/software integration, delivering robotic controls under a fixed production deadline.
- Traced intermittent CAN latency with a logic analyzer to a control-loop deadline overrun, moved scheduling to a fixed-rate timer interrupt, and revalidated motion; integrated SLAM registration with Unreal Engine, documented operations, and trained production staff.

Saddleback College Robotics (Mission Viejo, CA)
Co-Software Lead, Mars Rover Team | University Rover Challenge

06/2021 – 06/2023

- Co-led ROS 2 rover autonomy through two competition seasons, integrating Nav2 behavior trees, waypoint navigation, ArUco detection, obstacle avoidance, stereo cameras, LiDAR, GPS, and IMU fusion.
- Connected autonomous and teleoperated control to STM32 through an asynchronous Rust driver; integrated ODrive and CAN control, React/TypeScript and Foxglove interfaces, Jetson video, Gazebo/Isaac Sim environments, rosbag replay, and a Docker test harness.
- Validated autonomy through field trials and rosbag replay, coordinated subsystem integration through GitHub reviews, and built simulation tests that exercised navigation changes without vehicle hardware.

ADDITIONAL EXPERIENCE

Tata Consultancy Services (Remote)
Independent Field Researcher and Developer | Apple AR/LiDAR research partnership

12/2025 – 02/2026

- Configured sensors and validated field captures across multiple sites; developed C software and repeatable protocols for consistent indoor scanning.

MedBWS
Automation Lead | Hospital deployments

05/2020 – 06/2023

- Built a computer-vision and Swift iOS workflow for pharmaceutical identification and disposal in HIPAA-compliant hospital environments, including secure APIs, access controls, and audit logging.

TECHNICAL SKILLS

Firmware and hardware: C, ARM Cortex-M, STM32, bare-metal and RTOS firmware, CAN, UART, SPI, I2C, PWM, Altium, JTAG/SWD, oscilloscopes, logic analyzers

Autonomy and simulation: C++, Rust, Python, ROS 2, Nav2, behavior trees, sensor fusion, robot_localization, GNSS/IMU, PX4/MAVLink, Gazebo, Isaac Sim, ros2_control, rosbag, MATLAB/Simulink

Systems and tools: Linux, NVIDIA Jetson, Git, Docker, Nix, TCP/IP, UDP, DDS, COBS/postcard, Haskell, Go, TypeScript, FastAPI, PostgreSQL, OR-Tools, OPC-UA, Swift

ASSESSMENTS

CodeSignal Industry Coding Assessment: 600/600, August 2026

AFQT Predictor Test: 99th percentile, April 2026

EDUCATION

Irvine Valley College | Computer Engineering and General Engineering Coursework | GPA: 4.0

Relevant coursework: C++, Computer Organization and Assembly, MATLAB, Python, Calculus, Linear Algebra, and Differential Equations. Finalist, CLA Hacks 2023.