JAHAN KHAN

jahanzebkhan214@gmail.com
(949) 872-0649
Irvine, California
jahan-khan-fde.pages.dev

U.S. CITIZEN | WILLING TO RELOCATE

SOFTWARE AND EMBEDDED SYSTEMS ENGINEER

Builds ARM firmware, hardware interfaces, and signal-processing software, with production board bring-up and timing-failure diagnosis. Develops repeatable verification workflows, agentic aircraft-design tools, and ontology-driven manufacturing software.

Core engineering: C, C++, Rust, Python, Haskell; ARM Cortex-M/STM32, embedded Linux, bare-metal/RTOS firmware, CAN, UART, SPI, I2C
Signal processing and validation: FFT, CA-CFAR, IQ replay, MATLAB/Simulink; Altium, board bring-up, JTAG/SWD, logic analyzers, Git, Docker, Nix

ENGINEERING EXPERIENCE

Ibrium Studios (Los Angeles, CA) 09/2025 – 05/2026
Independent Embedded Systems Engineer | Production systems

- Architected distributed real-time controls for a production multi-axis motor system: ARM Cortex-M firmware, CAN messaging, multilayer Altium control boards, feedback, and fault-triggered safe stops.
- Owned board bring-up and hardware/software integration under a fixed production deadline; delivered operating documentation and trained production staff.
- Isolated intermittent CAN/control latency with a logic analyzer, traced a control-loop deadline overrun, moved scheduling to a fixed-rate timer interrupt, and revalidated motion.

Saddleback College Robotics (Mission Viejo, CA) 06/2021 – 06/2023
Co-Software Lead, Mars Rover Team | University Rover Challenge

- Integrated ROS 2/Nav2 autonomy across two rover competition seasons, including behavior-tree waypoint navigation, ArUco detection, obstacle avoidance, and stereo, LiDAR, GPS, and IMU inputs.
- Built an asynchronous Rust STM32 interface connecting autonomous and teleoperated commands to hardware; integrated ODrive CAN motor control, Jetson video, and React/TypeScript and Foxglove operator interfaces.
- Validated behavior through field trials, rosbag replay, and Gazebo/Isaac Sim environments; coordinated subsystem integration through GitHub reviews and containerized navigation tests.

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

- Develop engineering software and system architecture across aerospace, maritime, and advanced manufacturing, supporting the O3-led $15 billion-plus Orlando Sanford International Airport development opportunity.

Agentic Blended-Wing-Body Aircraft Design | *Python*, *NumPy*, *SciPy*, *OpenVSP*, *CalculiX*

- Built an automated aircraft-design workflow coordinating domain and validation agents across geometry, mass, payload, avionics, and multidisciplinary analysis. Connected parametric geometry with aerodynamic, structural, mass, and aeroelastic solvers.
- Screened hundreds of variants and validated three finalists with higher-fidelity tools; identified approximately 24% lower structural mass versus the trade-study baseline. Preserved solver artifacts and validation events, checked published references, and flagged uncertain outputs for engineering review.

Distributed Shipbuilding Ontology | *Rust*, *Python*, *FastAPI*, *PostgreSQL*, *React*

- Built ontology-driven software for distributed defense-vessel construction planning, connecting parts, equipment, personnel, and task dependencies to an operator interface. Integrated OPC-UA adapters and OR-Tools CP-SAT resource-constrained scheduling.
- Implemented role-based access, event history, and tamper-evident audit records; deployed locally and refined workflows with operator feedback for potential deployment by U.S. shipbuilders.

SELECTED SOFTWARE & VALIDATION PROJECTS

Electronic-Warfare Decision Engine | *Haskell, DSP, reproducible evaluation*

- Engineered a signal-to-decision pipeline using FFT and CA-CFAR detection, emitter-feature extraction, threat-library matching, and constrained response selection. Implemented confidence-based abstention when evidence was insufficient.
- Processed synthetic and recorded SigMF IQ; evaluated response plans against mission state, spectrum restrictions, and resource limits. Retained decision evidence for adversarial scenario evaluation and replay-based debugging in pinned Nix environments.

Flight-Software Analysis & Exploit Discovery | *Rust, PX4 v1.16*

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

ADDITIONAL EXPERIENCE

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.

Tata Consultancy Services (Remote) 12/2025 – 02/2026
Independent Field Researcher and Developer | Apple AR/LiDAR research partnership

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

MedBWS 05/2020 – 06/2023
Automation Lead | Hospital deployments

- 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 & ACADEMIC ACHIEVEMENT

CodeSignal Industry Coding Assessment: 600/600, August 2026
AFQT Predictor Test: 99th percentile, April 2026

EDUCATION

IRVINE VALLEY COLLEGE

Cumulative GPA: 4.0 | Computer Engineering and General Engineering coursework, all A’s
Relevant coursework: C++, Computer Organization and Assembly, MATLAB, Python, Calculus, Linear Algebra, Differential Equations