# JAHAN KHAN

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**U.S. CITIZEN**

## SOFTWARE ENGINEERING

Software engineering experience spanning operational applications, backend services, engineering analysis, and embedded systems. Python, TypeScript, Rust, and PostgreSQL; hands-on requirements discovery, integration, debugging, and validation. Available for full-time onsite work and internships.

Software and data: Python, TypeScript, React, Rust, FastAPI, PostgreSQL, OR-Tools CP-SAT, OPC-UA; Linux, Git, Docker, Nix
Systems and validation: C, C++, ROS 2, ARM Cortex-M, CAN, simulation, recorded-input replay, unit testing, hardware/software integration

## 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.

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

- 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) 06/2021 – 06/2023
*Co-Software Lead, Mars Rover Team* | University Rover Challenge

- 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)** 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

**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.