JAHAN KHAN

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(949) 872-0649
Irvine, California

U.S. CITIZEN

SOFTWARE ENGINEER – UNDERSEA DOMINANCE

Software engineer working across robotic controls, vehicle integration, and operator applications. Built ARM Cortex-M firmware through production handoff and React/TypeScript applications with Rust/Python services. Experience includes asynchronous device interfaces, shared asset-state modeling, and software- and hardware-in-the-loop testing. Investigated failures through timing traces and recorded-input replay. Based in Irvine, available for onsite work and travel.

Software: C/C++, Rust, Go, Python, React/TypeScript, PostgreSQL; Linux, AWS, Docker, Git, Nix
Vehicle systems and testing: ROS 2, STM32, CAN, sensor fusion, SITL/HITL, rosbag replay; concurrency, 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 software and systems engineering for aviation, maritime, and advanced-manufacturing programs, translating operational needs into software requirements and technical workflows.
- Develop system architecture, software and data requirements, simulation tools, and decision-support applications for aircraft engineering and shipyard operations.
- Connect software, control systems, and simulation workflows for aircraft and unmanned vehicles, with requirements traceability across engineering handoffs.

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; refined the application in response to operator feedback.

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.

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.

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 under a fixed production deadline. Built shared asset-state workflows with active-session conflict detection and guarded AWS shutdown to protect ongoing production work.
- Diagnosed intermittent CAN latency with a logic analyzer, traced it to a control-loop deadline overrun, and moved scheduling to a fixed-rate timer interrupt. Revalidated motion, documented operating procedures, and trained production staff; integrated SLAM registration with Unreal Engine.

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 ROS 2 autonomy and operator commands to STM32 through an asynchronous Rust driver and ODrive CAN controls. Built React/TypeScript and Foxglove interfaces for vehicle telemetry, waypoint commands, and Jetson video over a radio link.
- Tested vehicle software through SITL/HITL, field trials, and recorded-run replay. Used telemetry and rosbag records to investigate sensor and control behavior, verify changes, and coordinate subsystem integration through GitHub reviews.

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 and supported a computer-vision and Swift iOS pharmaceutical workflow across hospitals. Implemented secure APIs, access controls, and audit logging to make access and application activity traceable.

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, device drivers, TCP/IP, UDP, DDS, AWS, NVIDIA Jetson, Git, Docker, Nix, 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.