

ALI HAKAM

MECHANICAL DESIGN / ROBOTICS ENGINEERING

Vancouver, BC | Open to San Francisco Bay Area relocation | Available Jan 1, 2027
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Mechatronics BASc candidate with subsea hardware experience at Cellula Robotics and hands-on prototype development at Subvision. Strengths in mechanical design, fabrication, actuator integration, and physical testing.

ENGINEERING EXPERIENCE

Subvision Robotics

Founder, CEO & Technical Lead | Mar 2024 - Present

- Lead system architecture and prototype integration for a tethered hull-climbing robot, coordinating mechanical, power, controls, sensing, and testing work across a 12-person team.
- Designed the chassis and three-point drive around curved-hull contact, subsystem packaging, and service access. Built and tested subsea swerve gearboxes, including gear sizing and material selection.
- Implemented embedded actuation software and worked through ESC arming, signal timing, and low-speed motor tests; developed the bench and tank validation program.

Cellula Robotics

Mechanical Engineering Co-op | Sep 2024 - May 2025

- Designed hydrogen fuel-cell support hardware for autonomous underwater vehicles in SOLIDWORKS, including vent-stack mounting and pressure assemblies.
- Designed a 15 psi hydrogen/oxygen diluter pressure vessel using first-principles stress calculations, material selection, sourcing, and incoming-test planning.
- Built an instrumented airflow and thermal test rig with GUI-controlled fans to measure catalyst heating and evaluate input power and thermal interfaces.
- Automated PDM/ERP cross-referencing across datasets containing millions of entries using Excel VBA.

SELECTED BUILDS

Ball-and-plate control

Course project | Jan - Apr 2026

- Modeled and linearized two-axis platform dynamics; implemented PID, full-state feedback, and LQR with Python/OpenCV camera feedback. Examined servo limits, saturation, noise, and loop latency.

Marine Engineering Club / Formula SAE

SFU student teams | 2023 - 2024

- As Marine Engineering Club VP & Head of Design, led ROV structure, electronics mounting, waterproofing, and ROS thrust-vectoring integration. In Formula SAE, designed a steering suspension assembly, conducted FEA, and co-led welding and fabrication.

FIRST Robotics Competition

Founder & Head of Design | 2016 - 2020

- Founded one team and led three across two countries. Designed flywheel shooters, intakes, indexed reloading, and climbers; fabricated and integrated mechanical, electrical, and pneumatic systems.

EDUCATION & TOOLS

Simon Fraser University

BASc, Mechatronic Systems Engineering | Expected Dec 2026

- SOLIDWORKS / PDM, FEA, Fusion 360, Onshape; CNC machining, welding, 3D printing; MATLAB / Simulink, Python, C++, ROS, Git; requirements, integration, and test planning.