

# ULISES CHAVARRIA | ROBOTICS ENGINEER

## PROFILE

Mechatronics and robotics systems engineer with experience leading subsystem evaluation in early-stage medical robotics startups. Specializes in embedded motor control, sensor validation, distributed ML infrastructure, and API-constrained backend systems. Comfortable taking ambiguous hardware-software systems from prototype evaluation to production-ready decisions.

## EXPERIENCE

SHIFAMED (LAZA MEDICAL & MYRA VISION) | CAMPBELL, CA | 2022 - PRESENT

### ❖ ASSOCIATE R&D ROBOTICS ENGINEER (LAZA MEDICAL)

- Led BLDC motor control stack feasibility as 5th engineering hire; developed dual-loop PID firmware on ESP32 targeting 2 N-m torque.
- Benchmarked custom solutions vs. OTS (Maxon/Ingenia), identifying reliability risks that drove a strategic pivot.
- Implemented BNO055 IMU tracking with Kalman filtering; built test stations for gear ratio and torque characterization.
- Benchmarked subsystems (CPUs, GPUs, encoders) for performance-per-watt and contributed production C++/Python code.

### ❖ R&D ROBOTICS ENGINEERING INTERN (LAZA MEDICAL)

- Developed C++/Python drivers for magnetic tracking and integrated real-time USB sensor streaming pipelines. Modernized legacy code and contributed to ROS2-compatible middleware.

### ❖ R&D ENGINEERING INTERN (MYRA VISION)

- Supported first-in-human glaucoma trials via fixture design, regulatory docs, and PID thermal control systems.

ELECTRIC POWERTRAIN ENGINEER, SPARTAN RACING; SAN JOSE, CA – 2021-2023

- Contributed to a 300V, 60 kW Formula SAE electric powertrain; optimized battery interconnects via thermal-electrical simulation.
- System owner, designed dual-purpose power bus/passive fuse structures; team achieved 2nd place overall in competition.

## EDUCATION

- M.S. Computer Science and Engineering – Santa Clara University
- B.S. Mechanical Engineering – San Jose State University

## SKILLS

- **Robotics/Embedded:** ESP32, PID/BLDC Control, IMU (BNO055), Kalman Filtering, ROS2, Sensor Benchmarking.
- **Software/ML:** C++, Python, JavaScript (Node), TensorFlow, YOLOv11, SQLite, Linux (Ubuntu/Arch), CI/CD.
- **Hardware:** SolidWorks, Fusion 360, 300V Power Systems, Additive Manufacturing, Materials Characterization

## PROJECTS

- **Onshape DocuReader:** Deployed NodeJS/Express middleware with OAuth and intelligent caching to manage strict 30k annual API limits; serving internal engineering users on Raspberry Pi.
- **Knee Osteoarthritis Classifier:** Trained multi-class CNN (F1: 87.57) using TensorFlow; implemented multi-node distributed training across heterogeneous compute (RTX 3070/Mac).
- **TEE Probe Visual Tracker:** Developed YOLOv11-based depth tracking; prevented sunk costs by identifying sensor-environment mismatch early in exploratory R&D.