

MALACHI ESPINOLA

Robotics · Computer Vision · ML Infrastructure · Technical Leadership

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I climbed to CTO in just under two years at a high-velocity tech startup with \$8m in funding. I work in robotics, computer vision, and ML infrastructure. I'm a hands-on builder who also leads teams and shapes the strategy of the business. My strongest trait is turning ambiguous, unsolved problems into dependable working systems.

EXPERIENCE

Gradient — AI Robotics Startup (\$8M funded, ~20 employees) · Seattle, WA (onsite)

Chief Technology Officer

Feb 2026 – Sept 2026

- **Led a company-wide pivot** to a robotics-manufactured “repack” product line; cut ~\$250K/yr non-eng salary burn.
 - Pivoted the company away from an unprofitable consignment model burning ~\$2M/yr, replacing it with a product line that reached 20% profit margins within its first 7 weeks of operation.
 - Repurposed built infrastructure to manufacture products for the new business model, keeping dev time lean
- **Shipped “RM” marketplace in 4 months** (Next.js, AWS ECS, Stripe): Fully backwards compatible with robotics & inventory system, avoiding a costly rebuild of core infrastructure. Sold repacks as mentioned above.
 - **\$102K revenue and 2,400 signups in 7 weeks at 20% profit margin.**
- **Demoed the robotics division to eBay senior leadership** (CFO, Head of Collectibles) during an acquisition evaluation.
- **Rebuilt the engineering team 4 → 7 full time (& 3 interns)**
 - Implemented project documentation, sprint meetings, deliverable milestones, and standard hiring process to address the absence of structure. This greatly improved task output and sense of purpose.

Lead Software & Robotics Engineer

Jul 2025 – Feb 2026

- **LLM card-ID pipeline** (Elasticsearch, PostgreSQL): ~99.98% accuracy, 4.1 queries/s throughput running on local QWEN 3.6.
- **Novel IR foil-detection system**: 99.7% accuracy across three foil types. Uses an infrared camera mounted to the gantry to perform a “scan” and assembles images across frames using apriltags.
- **Card-sorting robot software stack** (embedded C++, Python, path planning) integrated with a vision audit backend.
- **Company-wide pricing database** (PostgreSQL, FastAPI): live pricing for 3M+ SKUs.
- **Distributed web scraper**: 20M+ pages → a 40M-row catalogue in 3 months. Fully modular & scalable, running 40 nodes.
- **Cloud sync infrastructure** (Kafka, Docker, PostgreSQL): 10+ containerized Python processes with SQL-backed queues and atomic transactions, integrating Odoo ERP, MongoDB, and AWS S3/RDS into a unified data pipeline.

Software & Robotics Engineer

Dec 2024 – Jul 2025

- **Production stack for 8 pneumatic gantry robots** (embedded C++, Python, ClearCore, Modbus).
- **OpenCV vision pipeline** (AprilTags, homography, Hough-line detection, adaptive thresholding): 95% crop success, 0.2s inference time across triple-camera capture. Created machine calibration routines with this infrastructure.
- **Built 3 pick-and-place robots in 6 weeks**: Prototype machines to test design patterns & cropping algorithms.

Genie Industries · Manufacturing Eng Intern → Software Engineer Intern

Jun 2023 – Jun 2024

- Designed an automated electrical assembly testing system, then got promoted to build an AI-driven PDF extraction tooling (Python, Tesseract OCR) that cut manual labor 90%+.

SELECTED PROJECTS

- **Wire-Harness Assembly Machine** (independent): 3-axis gantry for electrical sub-assembly — belt drives, optical sensing, precision motor control. Long-standing side project to automate difficult tasks in the wire harness industry.
- **Robotic Gantry Capstone** (team lead, 5 engineers): 2D gantry for mobility-impaired patients — design, simulation, machining, feedback control. *Won best design award out of 120+ students.*

EDUCATION

B.S. Mechanical Engineering, Mechatronics — University of Washington · 2024 · 3.86 GPA

- **President, Spikeball Club** (30+ members).

TECHNICAL SKILLS

Python, C++, SQL · OpenCV, AprilTags, path planning, embedded (ClearCore / Modbus / PID / Controls) · FastAPI, PostgreSQL, Elasticsearch, MongoDB, Odoo ERP, Kafka, Docker, AWS, Kubernetes · LLM pipelines, ML infrastructure · CAD, CNC, Lathe, FEA