Farbod Haeri

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EDUCATION

University of California, San Diego — *San Diego, CA*
M.S. Mechanical Engineering — ***2026-2027***
B.S. Mechanical Engineering (specialization in robotics and controls) — ***2024-2026***

SKILLS

CAD / CAM / CAE: SolidWorks (Simulation, PDM), Fusion 360, NX, AutoCAD, ANSYS (FEA)
Manufacturing: CNC mill, waterjet, laser cutter, FDM 3D printing, soldering (through-hole + SMD)
Programming: Python, MATLAB, Java, HTML/CSS
Robotics & Controls: control design: PID, lead-lag, notch filtering, state-space / LQR; loop shaping, pole placement, and gain / phase-margin tuning in MATLAB; state estimation / sensor fusion; motor / ESC / propeller selection
Test & Metrology: optical metrology, machine vision, fatigue testing, defect quantification, dataset auditing

RESEARCH EXPERIENCE

Undergraduate Researcher, UAV Controls & Robotics — ***Jan 2026 – Present***
Prof. Thomas Bewley · UC San Diego — *San Diego, CA*
Fixed-tilt hexacopter, fully actuated in 6 DoF, for target tracking and lost-object detection.

- Building the aircraft end to end: SolidWorks CAD, 3D-printed monocoque airframe, two flying prototypes.
- Ran thrust-stand tests of ducted vs. un-ducted propellers, measuring thrust, torque, and efficiency to drive the hexacopter's propulsion and ducting design.
- Designing the 6-DoF flight controller that decouples translational and rotational dynamics; modeling and tuning the gains in MATLAB, then validating attitude and position control in a motion-capture arena.

Undergraduate Researcher, Advanced Materials & Metrology — ***Aug 2025 – Dec 2025***
Prof. Maziar Ghazinejad · UC San Diego — *San Diego, CA*
Optical metrology and machine vision feeding fatigue-life models for AM steels.

- Built MATLAB pipelines quantifying defect fractions and surface roughness from raw metrology data.
- Designed 10+ mechanical components; machined fatigue and metrology fixtures on CNC mill and waterjet.
- Ran fatigue tests across material variants; logged stress data and audited datasets for traceability.

PROJECTS

Automated Cognitive-Training System for Mice (Jared Young Lab, UCSD) — **Jan *2026 - June 2026***

- Built the lab's operator dashboard (HTML / CSS / JavaScript) to launch sessions and watch live per-mouse reaction time, accuracy, and performance across multiple cages.
- Coded the Python / Flask supervisory software (training-cycle state machine and per-mouse scheduler) that sequences every stage from habituation through the 5-choice task, so protocols change in code instead of re-flashing hardware.
- Designed the per-mouse, per-stage data-logging pipeline (trial-level metrics and summary plots) and the Wi-Fi / MQTT link between the touchscreen rigs and the central computer.

MAE3 Autonomous Robot · 1st Place, UCSD MAE3 Robot Competition — **Sep *2024 - Dec 2024***

- Led mechanical design on a small team; built the chassis and drivetrain from scratch across three revisions.

WORK EXPERIENCE

County of Sacramento — ***May 2024 – Aug 2024***
Student Engineer Intern — *Sacramento, CA*

- Benchmarked energy use for 120+ county buildings: logged utility data and scored each building's efficiency.
- Rebuilt 50 buildings' utility histories into clean baselines and flagged the low scorers for audit and energy-reduction follow-up.

Apple — ***Jun 2022 – Apr 2024***
Materials Manager — *Elk Grove, CA*

- Planned and kitted inventory across 500+ SKUs for new-product builds; escalated risks to prevent line stoppages.
- Flashed and configured software on production units; ran boot and functional checks before each station handoff.
- Coordinated with suppliers and internal teams to clear constraints; owned daily status trackers and standups.