Milad Noah Mesbahi

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I build full-stack robotic systems at the intersection of learning and control, focusing on real-world autonomy that benefits people & planet.

Education

University of Washington — Seattle, WA
Ph.D. Candidate Computer Science (advised by Dr. Siddhartha Srinivasa) — *Starting Fall 2026*

University of Pennsylvania — Philadelphia, PA
M.S. Robotics (advised by Dr. George Pappas) — *Aug 2024 – May 2026*

University of California, Los Angeles — Los Angeles, CA
B.S. Mechanical Engineering (advised by Dr. Sungtaek Ju) — *Sep 2020 – Jun 2024*

Research Experience

GRASP Lab, University of Pennsylvania — Philadelphia, PA
Graduate Researcher — *Nov 2024 – Present*

Developing a multi-agent RL framework for AUV spatiotemporal underwater mapping, including 3D regression (sparse GPs, neural operators), improved credit assignment, and in-water experiments on physical robots building on prior simulation work.

Thermosciences Laboratory, UCLA — Los Angeles, CA
Undergraduate Researcher — *Jan 2023 – Jun 2024*

Studied how string tension affects liquid desiccant transport in novel mass exchangers through experimental design, automated image-based droplet tracking, and flow analysis.

Publications

N. Dal Fabbro, M. Mesbahi, R. Mendes, J. Borges de Sousa, G. Pappas. **Long-Term Mapping of the Douro River Plume with Multi-Agent Reinforcement Learning.** *IEEE International Conference on Robotics and Automation (ICRA)*, 2026. **Accepted.**

Industry Experience

BRINC Drones — Seattle, WA
Software Engineering Intern, Autonomy — *Summer 2026*

Upcoming internship focused on autonomous drone systems.

Blue Origin — Seattle, WA
Guidance, Navigation, and Control (GNC) Intern — *May 2025 – Aug 2025*

Developed Blue Origin's first high-fidelity EMA Simulink model for the BE-3U upper-stage engine, modeling plant dynamics and implementing field-oriented control, cascaded loops, and valve actuation with auto-code generation for hardware-in-the-loop testing.

NASA Jet Propulsion Laboratory — Pasadena, CA
Mechanical Engineering Intern — *Jun 2023 – Sep 2023*

Researched and assessed Caltech chainmail solids for shock and vibration damping using multi-axis testing, modal analysis, and FEM, informing future spacecraft structural designs.

Teaching

University of Pennsylvania — Philadelphia, PA
Graduate Teaching Assistant — *Fall 2025 – Spring 2026*

ESE 5000: Linear Systems Theory (Fall 2025, Prof. Pappas)
ESE 6050: Modern Convex Optimization (Spring 2026, Prof. Matni)

Selected Projects

RL Drone Racing Isaac Sim / PyTorch

Sim-to-Real PPO Quadrotor Racing *Fall 2025*

Built a custom PPO pipeline in Isaac Sim with gate-relative observations, domain randomization, and careful episode-reset logic; reached 5.72 s lap times in simulation and observed partial sim-to-real transfer (one stable lap), yielding lessons for robustness and generalization.

Autonomous VIO Quadrotor Python / ROS

Geometric Nonlinear Control for GPS-Denied Quadrotor Flight *Spring 2025*

Built an end-to-end GPS-denied quadrotor autonomy stack (global voxel-map planning, minimum-jerk trajectories in a differentially flat model, SE(3) control, visual–inertial ESKF) with real-time local replanning, achieving accurate 6-DOF tracking on EuRoC MAV benchmarks and improved robustness to obstacles and drift.

Autonomous Pick-and-Place System Python / ROS

Vision-guided manipulation with a 7-DoF arm *Fall 2024*

Implemented a vision-guided pick-and-place pipeline with AprilTag pose estimation, inverse kinematics, and orientation correction, achieving reliable block stacking and a robust sweeping strategy for dynamic blocks.

Me and You Always (MAYA) Web / Mobile

UCLA campus-wide social network *2021 – 2023*

Co-founded and led product design and growth for a social platform; built core features via self-taught web development and grew the platform to 4,000+ UCLA students.

Technical Skills

Languages: Python, C++, MATLAB, Bash, JavaScript/HTML/CSS

Machine Learning & RL: Gaussian processes, kernel methods, classical ML, deep learning, reinforcement learning (PPO, Q-learning), generative modeling (diffusion, flow matching)

Robotics & Control: Linear and nonlinear control (LQR, iLQR, MPC, PID), optimal control, optimization (convex, Bayesian), motion planning, state estimation (EKF, ESKF, UKF, PF), vision (VIO, NeRFs)

Tools & Frameworks: PyTorch, ROS, CVXPY, Drake, Isaac Sim, MuJoCo, Gazebo, Simulink, OpenCV, COLMAP

Infrastructure: Linux, Docker, Git, basic cloud (AWS), CI/git-based workflows, CAD and prototyping tools (SolidWorks, NX, Arduino, Raspberry Pi)