

ERIC OUANO

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EDUCATION

University of Texas at Austin

Ph.D Electrical and Computer Engineering

Incoming Fall 2026

CLeAR Lab | Texas Robotics | Oden Institute

B.S. Aerospace Engineering Honors | GPA: 4.00/4.00

May 2026

Coursework: Graduate Machine Learning, Feedback Control Systems, Linear Systems, Spacecraft Dynamics

RESEARCH EXPERIENCE

CLeAR Lab, UT Austin

June 2024 - May 2026

Undergraduate Researcher

- Extended SCOPED from static images to multiclass video out-of-distribution detection using temporal representations from NVIDIA Cosmos-Predict2.5, achieving a **99% AUROC** on the Honda Driving Dataset
- Built a **JAX research framework** integrating Motion Transformer predictions with a mixed complementarity problem solver for safety-aware multi-agent planning on the Waymo Open Motion Dataset; designed a decoder to select relevant agents from multimodal trajectories
- Developed a game-theoretic multi-agent path-planning algorithm in Julia using a Player Selection Network game, reducing runtime **10x**; second-author paper accepted to **AAMAS 2026** and **TMLR** (arXiv:2505.00213)

INDUSTRY EXPERIENCE

The Aerospace Corporation, El Segundo

May 2026 - Aug. 2026

Cross Mission Effectiveness Intern

- Designed an **LLM-as-a-judge experimental benchmark** with 30 expert-authored cases and reference-guided grading to evaluate 4 open-source models across 5 configurations
- Evaluated Claude Sonnet 4.5 for integration with government modeling-and-simulation software and built a **RAG-assisted AI workflow** that generated and validated an AFSIM radar model, improving target detection **2.6x**
- Engineered a feature pipeline for **5M+ noisy AIS observations**, filtering invalid vessel trajectories, and trained a scikit-learn logistic-regression classifier for military vessel identification

ATA Engineering, San Diego

May 2025 - Aug. 2025

Aerospace Analysis Engineering Co-op

- Formulated a real-time **nonlinear model predictive control** (NMPC) algorithm with ML-based state estimation in PyTorch for robust liquid rocket engine valve control
- Led end-to-end solar-loads analysis in STAR-CCM+, including geometry idealization, meshing, HPC parallelization, customer risk mitigation, and technical reporting
- Built a MATLAB load signal generator for NASTRAN modal-transient structural analysis of VTOL aircraft motors

Machine Learning and Entertainment Engineering Co-op

Aug. 2024 - Dec. 2024

- Implemented a **conditional diffusion model in PyTorch** for hypersonic heat-flux prediction, running **100x faster than CFD**; presented findings to 40+ ML researchers
- Led development of a structure-from-motion photogrammetry workflow for fluid analysis, reconstructing wind-tunnel finite-element meshes from only 2 sample images
- Developed Python tools for automatic VTK mesh segmentation and research-data management using Git version control

TECHNICAL PROJECTS

Texas Aerial Robotics, UT Austin

Sept. 2023 - May 2026

Lead Software Engineer

- Led 9 engineers in building and validating a **C++/Python ROS 2 autonomy stack** for object detection, navigation, and aerial retrieval in PX4/Gazebo; achieved **100% success** in a university demonstration
- Built a real-time receding-horizon control algorithm for centralized trajectory optimization of 4 drones, enforcing dynamics and collision constraints in simulation
- Developed MATLAB UAV simulation software for the 2024 Raytheon drone competition, implementing A* pathfinding on an NCAA football field

TECHNICAL SKILLS

Languages: Python (PyTorch, scikit-learn), JAX, Julia, C/C++, MATLAB

Machine Learning: LLM evaluation, RAG, diffusion and world models, OOD detection, multimodal trajectory prediction, statistical model evaluation, optimization, game theory, multi-agent planning

Robotics: OpenCV, ROS 2, Gazebo, PX4 SITL

Tools: Linux, Git, CUDA, Slurm