# ERIC DANIEL F. OUANO

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## EDUCATION

**University of Texas at Austin** Expected May 2026
*Bachelor of Science, Aerospace Engineering Honors*
**GPA: 4.00/4.00**
Relevant Coursework: Introduction to Machine Learning (graduate), Feedback Control, Spacecraft Dynamics, Flight Dynamics

## AWARDS

*GEM Fellowship* (Employer-Selected)

- Selected by The Aerospace Corporation. Award includes a corporate research stipend and internships; eligible for university tuition matching upon admission.

## PUBLICATIONS

T. Qiu, **E. Ouano**, F. Palafox, C. Ellis, D. Fridovich-Keil. "PSN Game: Game-theoretic Prediction and Planning via a Player Selection Network." *Proceedings of the 25th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2026)*, Extended Abstract, May 2026. [pdf]

## RESEARCH EXPERIENCE

*CLeAR Lab*, UT Austin June 2024 – Present
Undergraduate Researcher

- Architecting a multi-agent planning framework in JAX, improving Motion Transformers (MTRs) to generate safe, context-rich trajectory plans
- Developed a game-theoretic path planning framework in Julia achieving a 10× reduction in runtime using a Player Selection Network
- Currently researching an OOD detector using the Cosmos World Foundation Model Platform based on SCOPED

*Inverse Material Geometry Reconstruction*, UT Austin Aug 2025 - Dec 2025
Researcher, self-guided research project for COE397 under Dr. Tan Bui

- Implemented a fast autoencoder pipeline to construct nonlinear material geometry conditioned on DIC field and force-displacement data from the 2025 Mechanical MNIST Challenge
- Achieved one-shot geometry reconstruction under data constraints, with successful lightweight identification of key geometric features

*ATA Engineering*, San Diego Aug 2024 - Dec 2024 | May 2025 - Aug 2025
ML and Analysis Co-op

- Formulated a Nonlinear Model Predictive Control (NMPC) algorithm with VAE-based state estimation for robust valve control during liquid rocket engine startup using PyTorch
- Implemented a generative diffusion model for conditional hypersonic heat flux contour prediction in PyTorch and presented my findings to 40+ AI/ML researchers
- Spearheaded a photogrammetric mesh generation workflow using SfM for fluid analysis under sparse data constraints

## ACADEMIC LEADERSHIP

*FlareX Wildfire Competition*, UT Austin — Aug 2025 - Present
Chief Engineer, Senior Capstone Design

- Lead technical development on a VTOL-capable autonomous aircraft while meeting system requirements and solving critical design issues
- Developing a custom VTOL-to-Forward flight transition simulation to optimize propeller throttle levels during a critical flight mode, integrating vehicle dynamics, power requirements, and stochastic wind perturbations

*Texas Aerial Robotics*, UT Austin — Aug 2023 - Present
Software Lead

- Led a team of 9 to program and validate our ROS suite in a SITL Gazebo simulation running on Linux for autonomous object detection and retrieval using a servo-activated claw drone
- Integrated thresholding image segmentation and ArUco localization within an imageZMQ publisher-subscriber network to stream Jetson camera feed for Cockrell's World of Engineering outreach event
- Creating a machine learning vision challenge focused on drone-based object detection to introduce 120+ members to computer vision and ML

## ORAL PRESENTATIONS

December 2024. "Diffusion Models for Hypersonic Surrogate Modeling", ATA Engineering Internal Technical Seminar

## TECHNICAL SKILLS

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| **Languages** | Python, Julia, C++, MATLAB |
| **Tools and Softwares** | ROS, Gazebo, Simulink, Solidworks, STAR-CCM+ |
| **Software Libraries** | PyTorch, JAX, SciPy, Pandas, NumPy, OpenCV |