Tam (Jimmy) Tran

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EDUCATION

University of Colorado Boulder — **Boulder, CO**
M.S. in Robotics (GPA: 4.0) — *August 2025 – Present*

Princeton University — **Princeton, NJ**
B.S.E. in Mechanical & Aerospace Engineering (GPA: 3.5) — *September 2021 – May 2025*

WORK EXPERIENCE

Perception, Robotics, AI, and Sensing (PRAISe) Lab — **Boulder, CO**
Graduate Research Assistant — *September 2025 – Present*

- Developing a conservative autonomy framework that integrates lightweight foundation models into robotic perception pipelines to improve navigational safety bounds under uncertainty
- Investigating the use of vision language models as secondary semantic grounding agents, explicitly decoupled from direct control and planning outputs to preserve predictable system behavior
- Prototyping the deployment and evaluation of the framework on resource-constrained platforms
    - Using the *AgIRoM* aerial robotics platform for the base autonomy stack, with VINS-Mono for monocular visual-inertial state estimation

Pliant Energy Systems — **Brooklyn, NY**
Robotics Software Intern — *May 2024 – August 2024*

- Programmed software applications for full-stack development on board C-Ray, a robotics platform designed to traverse challenging 'wet' environments (sea, beach, ice) using undulating fins
    - C++, Python, MOOS-IvP (marine robotics middleware developed by MIT), ROS
- Leveraged Blue Robotics' open-source repository to develop a 3D sonar SLAM (Simultaneous Localization And Mapping) pipeline for improving localization uncertainties in DVL (Doppler Velocity) and Dead-Reckoning (IMU-based) sensor fusion
- Coded a MOOS-based driver interface for an Oculus sonar sensor
- Designed a communications app to broadcast sensor data to a satellite server

Intelligent Robot Motion Lab — **Princeton, NJ**
Undergraduate Researcher — *January 2023 – May 2025*

- Built *AgIRoM*: a UAV research platform for agile autonomous vision-based flight that extends the work conducted by the UZH Robotics and Perception Group on their *Agilicious* Platform
    - The quadrotor uses visual-inertial odometry for state estimation in GPS-denied environments
    - Build guide hosted on personal website referenced by researchers around the world
- Led a three-person team to implement a depth-based motion planning pipeline
    - The pipeline bridges data (sensors, telemetry, commands) within a larger robot ecosystem to allow for modular integration of high-level planner methods onboard *AgIRoM*
    - Successfully demonstrated in a live-flight navigation example using work conducted by graduate researchers in IRoM Lab onboard the quadrotor

TEACHING

MCEN 4228/5228 – Special Topics in Mechanical Engineering: AI for Engineers — *Spring 2026*
Course Assistant

PERSONAL PROJECTS & RELEVANT SKILLS

Mini-TARS w/ LLM Voice Prompting — December 2024 – May 2025

- Built a functional scaled-down replica of the robot TARS (from the movie *Interstellar*), equipped with voice commands and real-time interaction via a language model run on a local server

Software Skills: *C++, Python, ROS, Docker, OpenCV, Pointcloud Library, SLAM, Gazebo, MOOS-IvP, MATLAB, Simulink, Camera Calibration, Feature Matching, Panorama Stitching, Structure from Motion*

Hardware Skills: *Flight Controllers, NVIDIA Jetson, Visual Inertial Odometry Cameras, Stereo Depth Cameras, Optical Flow Sensors, Sonar Sensors, IMUs, Computer Aided Design (Fusion360, PTC Creo), 3D printing, Soldering*