Tam (Jimmy) Tran

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EDUCATION

University of Boulder Colorado   **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

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*

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*