

# Ethan Tse

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## Summary

M.S. candidate in Electrical and Computer Engineering with 6+ years of experience in software development. Internship experience at NASA working on robotic teaming, and at Siemens working on embedded systems. Ten semesters of research experience on topics such as autonomous unmanned aerial vehicles and multimodal robotics. Seeking fulltime position in software, embedded systems, or robotics.

## Education

### Georgia Institute of Technology | Atlanta, GA

Master of Science in Electrical and Computer Engineering | GPA: 3.5

Expected Graduation, May 2026

Bachelor of Science in Computer Engineering | GPA: 3.72

Graduated, May 2024

- Concentration in Robotics and Distributed Systems & Software Design
- Graduated with Highest Honors

## Skills

**Programming:** C++, C, Python, MATLAB, Java, LabVIEW, Simulink

**System and Tools:** Linux, Git, ROS 2, LaTeX

**Design and Hardware:** Eagle, Altium Designer, SolidWorks

**Embedded and Platforms:** Arduino, STM32, NVIDIA Jetson, Raspberry Pi, Turtlebot 3

**Lab and Prototyping:** Soldering, Oscilloscope, Multimeter, 3D Printing, Laser Cutter, Water Jet

## Experience

### Georgia Tech DART (Dynamic Adaptive Robotic Technologies) Lab | Atlanta, GA

August 2024 – Present

#### Graduate Research Assistant

- Prototyped a multimodal unmanned ground vehicle (UGV) that can glide over obstacles by modifying a high-speed RC truck by affixing wings to it with lightweight 3D printed mounts.
- Integrated new flight electronics including a Pixhawk 6X and a Jetson Nano Orin onto the UGV which can command both the wheels and wings of the vehicle.
- Constructed a custom wing based on a NACA 6412 profile from scratch out of wooden laser cut ribs and foam board.
- Designed and fabricated an aluminum mount for a Universal Robots UR5e arm to attach to a Husarion Panther UGV.
- Established basic ROS 2 MoveIt control of UR5e robotic using a Nvidia Jetson Orin Nano.

#### Graduate Teaching Assistant / Head TA for "ME 4451 Robotics"

- Collaborated with professor and teaching team to support 120+ students over two semesters.
- Refined and led weekly labs which provided students an overview of robotic arms, computer vision, and mobile robotics.

### Georgia Tech AREAL (Aerial Robotics and Experimental Autonomy Lab) | Atlanta, GA

August 2021 – May 2024

#### Undergraduate Researcher

- Developed ROS 2 software package that performs infrared beacon-based localization by encoding and decoding binary beacon IDs.
- Developed C++ code which integrates the new BehaviorTree.CPP 4.0 library onto the drone and interacts with ROS 2 nodes.
- Designed and fabricated a PCB in Altium that connects the various mechatronic elements of the ground vehicle together.

### National Aeronautics and Space Administration (NASA) | Huntsville, AL

May 2023 – July 2023

#### OSTEM Intern / ST-13 Branch

- Designed an overarching system of 19 various ROS 2 nodes that can carry out the Surface Mobility Demo mission plan.
- Created a controller that sends the a rover to desired positions and orientations (pose) that uses a proportional-integral-derivative (PID) controller for movement, and a behavior tree to manage a first-in, first-out queue which stores desired poses.
- Modified the pose controller to create a tractor beam module so that one rover can follow behind another.
- Installed and reconfigured the ROS 2 drivers for an Ouster OS-1 LiDAR Sensor to allow it to publish sensor data to Kudan's "kdlidar" SLAM software, which would then create a 3D point cloud map of the target area.
- Rewrote the LiDAR Rover's costmap creation code, which turns a 3D SLAM map into a 2D map that marks hazardous terrain, allowing it to be more efficient and fully integrated into the ROS 2 stack.

### Siemens Electrical Products | Atlanta, GA

May 2022 – August 2022

#### Engineering Leadership Development Program (ELDP) Intern / R&D Electronics

- Implemented firmware in embedded C to send current and voltage data via BLE (Bluetooth Low Energy) to a phone app.
- Created a LabVIEW program and GUI to communicate with the I2t tester (circuit breaker tester) and automate breaker trip-curve testing.
- Developed a "Linear Thermal Memory" feature in embedded C on the breaker, a safety feature that changes overcurrent trip time based on time from last overcurrent trip.

## Publications

Garlow, A., Tse, E., Rogers, J., "Autonomous Landing of a Multirotor on a Mobile Vehicle Using Infrared Beacons," [submitted for publication]. Journal of Aircraft 2025