

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 on topics such as autonomous unmanned aerial vehicles and multimodal robotics. Seeking a Graduate Research Assistantship for Summer 2025.

Education

Georgia Institute of Technology | Atlanta, GA

Master of Science in Electrical and Computer Engineering

Expected Graduation, May 2026

Bachelor of Science in Computer Engineering, with Highest Honors

Graduated, May 2024

- Concentration in Robotics and Distributed Systems & Software Design
- Member of the Honors Program Living Learning Community

Skills

Programming: C++, C, Python, MATLAB, Java, ROS 2, LabVIEW, Simulink, VHDL, Verilog

Software: Linux, GitHub, Eagle, Altium, SolidWorks, Microsoft Office

Hardware: Oscilloscope, Multimeter, Raspberry Pi, Arduino, STM32, FPGAs, Nvidia Jetson

Communication: Technical Reports, Presentation, Public Speaking, Acting, Improv Comedy

Machining: Soldering, 3D Printer, Water Jet, Laser Cutter, Wood Working

Research

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

August 2024 – Present

Graduate Researcher / Multimodal Locomotion Project

Designed a new unmanned ground vehicle that performs multimodal (wheeled and gliding) locomotion to surmount obstacles.

- Engineered and fabricated lightweight 3D printed mounts to affix wings to a high-speed RC truck, converting it into a multimodal unmanned ground vehicle (UGV) that can glide over obstacles.
- 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.

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

August 2021 – May 2024

Undergraduate Researcher / Autonomous Quadrotor Landing on Moving Vehicle

Developed software and mechatronic features that enable autonomous capabilities for multi-rotor vehicles.

- Implemented “consensus-based grouping” task allocation system for multi-agent firefighting system.
- Developed ROS 2 software package that performs infrared beacon-based localization.
- 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.

Work Experience

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

May 2023 – July 2023

OSTEM Intern / Lunar Surface Mobility Demo (ST-13 Branch)

Contributed to the Lunar Surface Mobility Demo, which is a technical demonstration of a heterogeneous multi-rover system.

- Designed an overarching system of 19 various ROS 2 nodes that would carry out the Surface Mobility Demo mission plan.
- Created a controller that sends the SVGS 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 where the SVGS rover would follow behind the LiDAR Rover.
- 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

Worked on various software projects relating to the development of Siemens Solid State Circuit Breaker (SSCB).

- 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