

# Tianhao (Stan) Wu

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## Education

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**University of Southern California**, Los Angeles, CA Exp. Grad: Fall 2024

Major: B.S. Applied and Computational Mathematics, B.S. Computer Engineering and Computer Science

CGPA: 3.96/4.0 Major GPA: 4.0/4.0

Honors: Dornsife Dean's List (Spring 2021 – Spring 2023), Viterbi Dean's List (Spring 2022 – Spring 2023)

MHI Undergrad Scholars (2023-2024): one of the five selected students from the ECE department

Awards: Academic Achievement Award (Fall 2023)

Lenore B. Kreiger Endowed Scholarship for Math (2022-2023)

## Research Experience

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**Research Assistant**, USC, Los Angeles, CA July 2023 - present

- Computer vision project on **object segmentation** and interpretation of object behaviors

**W.V.T. Rusch Undergraduate Engineering Honors Program**, USC, Los Angeles, CA Jan 2023 - present

- Taking honors program courses and complete a bachelor's thesis in the final semester

**USC CURVE Fellowship: Safe and Intelligent Autonomy Lab**, USC, Los Angeles, CA Aug 2022 – May 2023

- Learned the theoretical foundation of **Hamilton-Jacobi reachability analysis**
- Familiarized with two toolboxes, **HelperOC** and **DeepReach**, to compute **Backward Reachable Tubes** (BRTs)
- Implemented a 2D system in DeepReach using **Pytorch** when the target set represents failure/goal sets
- Explored effects of activation in DeepReach on high-dimensional dynamical systems; finished a 6-page paper

**UCInspire Program: Intelligent and Autonomous Systems Lab**, UCI, Irvine, CA Jun – Aug 2022

- Assisted in developing an **autonomous drone** that could detect and avoid a set of fixed obstacles
- Collected a dataset using **Roboflow**; trained **YOLOv5** model with custom dataset for **object detection**
- Tested a **Time-of-Flight sensor** to communicate with **jetson nano** and measure distance
- Assembled parts of the drone and performed GPS calibrations in **Mission Planner** ground control station (GCS)
- Scripted a flight program in **Python** and simulated it in **Dronekit-Sitl** to ensure the safety of the flight

## Work Experience

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**Undergraduate Course Producer**, USC, Los Angeles, CA

- EE 109: Introduction to Embedded Systems Fall 2023
- CSCI 360: Introduction to Artificial Intelligence Spring 2023
- CSCI 102: Fundamentals of Computation Spring 2022 – Spring 2023
  - Held weekly office hours and lab sessions to help students understand course materials
  - Assisted professors in grading, proctoring exams, and answering questions on Piazza

**CS@SC Summer Camp, Teaching Assistant**, remote Jun – Aug 2022

- Led 6 classes, each of eight K-12 students, in topics of **Python**, **Scratch Jr**, **Scratch**; 15 teaching hrs per class

## Projects

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- Built a **hexapod robot** controlled by **Raspberry Pi**; implementing object segmentation with an onboard camera
- Built a **first-person view (FPV) drone** from scratch; assembled all components; soldered wires; calibrated the drone with flight controller software; connected the drone with radio transmitter and goggle
- Implemented music genre classification model with **Convolutional Neural Network (CNN)**
- Implemented a **perceptron model** that classifies movie reviews into “positive” or “negative”
- Built an **ultrasonic rangefinder** using various hardware components; programmed **Arduino Uno** in C

## Skills

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*Coding:* Python, C/C++, Matlab, Latex, SQL

*Tools/skills:* Machine/Deep Learning, Pytorch, Numpy, Dronekit, Linux (Ubuntu), git, Arduino programming, Excel

*Languages:* English (proficient), Mandarin Chinese (native), Spanish (elementary)