

# Darren Au

darren.au@utexas.edu | (650) 861-1975 | Santa Clara, CA

## EDUCATION

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### University of Texas at Austin

2021-2025

*BS Mechanical Engineering, Elements of Computing Certificate*

*Austin, TX*

- GPA: 4.0/4.0
- Relevant Coursework: Statics, Vector Calculus, Differential Equations with Linear Algebra, Thermodynamics, Elements of Software Design
- Clubs: Texas CSA, Texas TASA, ASME, SASE Texas

## TECHNICAL EXPERIENCE

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### Texas Rocket Engineering Lab

Austin, TX

*TVC Lead*

Jan 2022 – Present

- Leading team tasked with designing a gimbal for the engine to provide thrust vector control for the rocket
- Created Solidworks assembly of preliminary design
- Performed calculations to determine necessary bearing loads, linear actuator force, etc
- Ran FEA simulations on Ansys to determine stress and strains of design when forces are applied.

*GNC – Controls Engineer*

Aug 2021 – Jan 2022

- Created Simulink model to map the angular acceleration command of rocket to angular acceleration command of the 3 fins control simulation.
- Programmed MATLAB script to perform a Monte Carlo simulation on the 6DOF simulation
  - Varied wind model and zero-lift drag coefficient
- Analyzed data from simulation to determine distribution and probability of achieving specific apogees

### Human-Enabled Robotic Technology Lab

Austin, TX

*Research Assistant*

Aug 2021 – Present

- Worked under Dr. Ann Majewicz Fey to analyze the difference in motions required for surgery between laparoscopic tools and robotic surgical systems.
- Created 3D printed housing for EM Trackers to attach to laparoscopic tools.
- Programmed MATLAB scripts to create plots and analyze biometric and kinematic data from experiment

### First-year Introduction to Research in Engineering

Austin, TX

*Student*

Aug 2021 – December 2021

- Worked under Dr. Michael Cullinan in studying the project topic: Machine Learning & Neural Networks for Image Processing
- Created algorithm with Python OpenCV to detect areas of high gradient intensity in AFM scans.
- Trained UNet convolutional neural network on custom dataset made with above algorithm to perform image segmentation on new images

### Longhorn Racing Electric

Austin, TX

*Unsprung Engineer*

Feb 2022 – Present

- Machined and manufactured components for the UT's FSAE electric vehicle
  - Used: manual mill, lathe, mini mill, drop saw, bandsaw, etc
- Drafted technical drawings to communicate design intent to machinist

## SKILLS

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- Python, SolidWorks, MATLAB, Java, C++, , Ansys, Excel, LaTeX, AutoHotKey, Googling