Darren Au

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EDUCATION

University of Texas at Austin **2021-2025**
BS Mechanical Engineering Honors, Elements of Computing Certificate *Austin, TX*
- GPA: 4.0/4.0

TECHNICAL EXPERIENCE

Texas Rocket Engineering Lab **Austin, TX**
Thrust Vector Control Lead Jan 2022 – Present
- Designed a gimbal for the engine to provide thrust vector control for the rocket
- Performed solids calculations to determine necessary bearing loads and linear actuator force
- Created Solidworks assembly of preliminary design and ran Ansys FEA simulations to determine stress and strains of design when forces are applied
- Designed test stand capable of applying 15.5 kN load dynamically while system is moving
- Created mapping algorithm to convert desired angle to linear actuator movement of system

Guidance Navigation Controls – 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
- 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
- Conducted research under Dr. Ann Majewicz Fey to create an OpenCV script to measure the dimensions of a ring using a camera
- Implemented anti distortion calibration through checkerboard recognition
- Worked on a PID controlled Arduino pump to create a smooth inflation of rings

Longhorn Racing Electric **Austin, TX**
Unsprung Engineer Feb 2022 – Present
- Machined and manufactured components for the UT's FSAE electric vehicle
- Drafted technical drawings to communicate design intent to machinist
- Helped create a simulation that sweeps through various parameters to determine the optimal values to use on our FSAE Vehicle

Personal Projects

First-year Introduction to Research in Engineering **Austin, TX**
Research Assistant Aug 2021 – December 2021
- Applied machine learning techniques to study image progressing under Dr. Michael Cullinan
- 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

SKILLS

- Proficient: Python, SolidWorks
- Experience With: MATLAB, Java, C++, Ansys, Excel