Audrey Chen

818-813-1880 | auds@mit.edu | linkedin.com/in/auds | audschen.com

EDUCATION

Massachusetts Institute of Technology
Sep. 2020 – Present

- **Bachelor of Science in Mechanical Engineering concentrating in Control, Instrumentation and Robotics**
- **Minor in Business Management**
- **Selected Coursework**: Dynamics and Controls I and II, Materials and Mechanics I, Design and Manufacturing, Electronics for Mechanical Systems I and II, Introduction to Robotics, Instrumentation and Measurement
- **GPA**: 4.9/5.0

EXPERIENCE

MIT Arcturus Autonomous Robotics Team - Founder and Captain
Oct. 2021 – Present

- Oversee all engineering and business subteams, totaling 60 members
- Assist in design and manufacturing for autonomous underwater vehicle and autonomous boat
- Manage major deadlines and system integration for international competitions in Florida and Norway
- Act as liaison between MIT admin, sponsors, and mentors
- Created mentorship and sponsorship network of 20 companies, raising $85K in grants and donations
- Published paper about boat's low-cost electromechanical systems for the IEEE conference, OCEANS 2023
- Run outreach events for K12 through demos, classes, and expos
- Coordinate member training and onboarding
- Managed budget and recorded finances, including tax exemption
- Act as program director for Discover Ocean Engineering, a program which gives first-year students hands-on experience in marine robotics and prepares them for careers in ocean engineering

Capra Robotics - Robotics Applications Intern
June 2023 - Aug. 2023

- Developed electronics and PID control for stabilizing and aiming a hyperspectral camera using gimbal motors, encoders, and IMU
- Wrote ROS2 node enabling serial connection to gimbal motor control board for data publishing and positional control
- Manufacture and mechanical design of vertical lift, capable of lifting gimbal assembly from 32.5 cm to 105 cm using only off-the-shelf aluminum and 3D-printed parts
- Implemented hardware and software safety stops on lift and gimbal

NASA Orbiting Arid Subsurface and Ice Sheet Sounder (OASIS) - Intern
Mar. 2020 – Aug. 2020

- Conducted literature review of extent and depth of Qatari aquifers
- Explored the applications and limitations of ground penetrating radar and investigated how technology from previous NASA spacecraft might be applied for OASIS
- Reported to the OASIS Project Manager weekly
- Gave final presentation to the OASIS Principal Investigator, USC professors, and Qatari representatives

Drone Air Traffic Control Research at NASA JPL - Intern
June 2019 – Sept. 2019

- Communicated and collaborated with students at Occidental College and engineers on the Mars helicopter, Ingenuity
- Researched implementation of drone technology for exploration of planets and moons
- Investigated major companies and regulatory institutions in Unmanned Aircraft System Traffic Management
- Reported to Project Manager weekly

NASA JPL Space Academy - Deputy
Sept. 2018 – Dec. 2019

- Designed, built, and launched model spacecraft from the JPL Mars Yard

- Designed and oversaw international stock market simulation for mock startup companies in Google Sheets
- Oversaw and taught five consultants and 75+ students
- Collaborated with three teachers and 16 students in the Spanish division to run both academies in parallel
- Selected by Art Chmielewski, the Project Manager of the U.S. Rosetta Project and director of the academy to travel to our Sister City, La Villanueva de la Cañada, Spain and represent the academy internationally

RESEARCH

Sea Perch II - Researcher
Jan. 2022 – Present

- Developed fluidic control board to control actuation of soft robotic grippers
- Contributed to final research paper submitted to and accepted by the OCEANS 2022 Hampton Roads conference

Melbourne School of Design Robotics Lab - Visiting Researcher
June 2022 – Sept. 2022

- Designed and built 600-pound outdoor mobile robot equipped with mechanical arm for construction applications
- Programmed autonomous navigation and SLAM in ROS2 using lidar and stereo camera data

Ortho IQ - Research Assistant
May 2021 – Aug. 2021

- Designed orthopedic medical device which uses laser displacement sensors, accelerometers, and embedded cameras to measure displacement of trunnion into femur
- Designed medical device, including integration of electronics and attachment to trunnion in Solidworks
- Used additive manufacturing to produce mock-ups for presentation to investors

MIT HAUS - Design Team Researcher
May 2021 – Aug. 2021

- Performed computer-aided design and FEA of 3D-printed rPET walls in Solidworks
- Created floor plans configuring position of fixtures and appliances for utilities integration
- Developed plans for manufacturing these homes using additive manufacturing in small-scale factories in countries lacking access to shelters

Boston University Computational Neuroscience Department - Research Assistant
July 2019 – Aug. 2019

- Used MATLAB to simulate the effects of varying the amplitude and pulse width on the accuracy of information transmission through the thalamus for deep brain stimulation, a surgical treatment for advanced Parkinson's Disease
- Presented research findings during a final symposium to professors and the general public

PROJECTS

Design and Manufacturing I - Competition Robot

- Developed a robot which could complete several game board tasks including pushing upper and lower buttons, lifting a weight, pulling a counterweight lever, and pushing balls
- Manufactured linear lift and chassis from aluminum sheet metal and machined delrin, using differential steering for tight turn radii
- Optimized wheel and motor selection so robot moved quickly while still climbing hill without slipping or tipping
- Ultimately placed in top 10% of students

Autonomous Bottom Sampler Boat

- Designed and built cadamaran boat and developed winch system to retrieve soil samples from ocean floor

SKILLS

Languages : Spanish, Python (Numpy, Matplotlib), Java, MATLAB, Arduino, ROS2
Manufacturing : Drill press, lathe, milling, CNC, laser cutting, woodworking, glassblowing, casting, metalsmithing
Software : CAD (Solidworks, Autodesk Inventor, Fusion 360), Adobe Creative Cloud, Microsoft Office, Rhino, Blender, Slack, GitHub