

Huntsville, AL

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EDUCATION

University of Alabama in Huntsville (UAH), Huntsville, AL

Expected Graduation: May 2025

- Major: Aerospace Engineering; Minor: Mathematics
- GPA: 3.921/4.00

Select Courses: Computer-Aided Design, Analysis of Engineering Systems, Compressible Aerodynamics, Thermodynamics, Numerical Methods, Applied Differential Equations, Mechanics of Materials, Aircraft Stability and Control, Astrodynamics.

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C++, Microsoft Visual Basic.

Other Skills: Fluent in Spanish, 3D Printing and Scanning in Professional Applications, 3D Modeling in Fusion 360 and Solid Edge, Graphic Design in Adobe Creative Cloud and Affinity Software, Photography, Computational Fluid Dynamics, Computing using Linux, Machining with the use of a Mill and Lathe.

EXPERIENCE

Undergraduate Teaching Assistant, UAH College of Engineering (Fall 2022 – Current)

- Courses: Compressible Aerodynamics and Intro to Computing for Engineers.
- Hosted office hours to reinforce class material, improving understanding of key concepts of computing for engineering purposes using MATLAB and Python, as well as the understanding of high-speed aerodynamics, including the numerical and computational techniques required to solve these problems.

Orientation Leader, UAH Admissions (Summer 2022 – Summer 2024)

- Created a welcoming environment for incoming students and was a peer mentor for Engineering Students.
- Organized and led team building exercises and presented information about campus to an audience of over 100 students and parents, honing public speaking and organizational skills.

Resident Assistant, UAH Housing and Residence Life (January 2022 – August 2023)

- Developed a strong sense of community within the residence hall through events and activities for more than 200 residents.
- Engaged in genuine interactions with each one of the residents in my floor, as well as several other residents in the hall, aiding them with their transition to college and bolstering their involvement around campus.

PROJECTS AND RESEARCH EXPERIENCE

Compressible Flow and Personal Coding Projects:

- Numerical Solution of Shocks: Developed python simulations to determine the upstream and downstream Mach numbers and thermodynamic conditions of normal and oblique shocks, expansion waves, and flow over a right cylindrical cone. To solve the governing equations of these flows, various numerical methods such as numerical integration and the Fourth order Runge-Kutta method were used.

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- Computational Fluid Dynamics (CFD) Solution of Quasi-1D Nozzle: Developed a CFD code to solve for the subsonic-supersonic isentropic flow through an arbitrary convergent-divergent nozzle using MacCormack's Predictor-Corrector Technique.
- Development of a Gas Tracking Application: Developed a MATLAB application that solves the issue of having a broken gas tank gauge in my car. The app calculates and tracks information on my gas usage from information on my refuels.

Undergraduate Research Experience

- Mach Diamond Formations on Compressed Air Nozzles: Collection of Schlieren imaging of the supersonic flow from different compressed air nozzles to analyze the compression and expansion wave formations in the exit; as well as development of a CFD simulation to perform a comparison between the experimental, and analytical results.
- Flapping Wing Aerodynamics Research: Work on development of a working prototype of a bio-inspired micro aerial flapping wing vehicle, building up on the results obtained from previous experiments which studied the aerodynamics of butterfly wings, performed at the UAH ATOM lab.

Other Engineering Projects

- UAH Moon Buggy Team: Member of the 2024 – 2025 UAH Moon Buggy team for the NASA HERC (Human Exploration Rover Challenge) competition. In charge of designing the main rear steering locking mechanism, as well as the new implementation of dual steering modes for the rover. Experience with analysis and testing of the designs, as well as presentation of these designs in front of engineering professionals.

ACTIVITIES

- Phi Kappa Psi, Vice President
- Board member of SOAR (Service and Civic Engagement Student Organization at UAH)
- Rock Climbing
- Outreach graphic design and photography for the UAH College of Engineering.
- Society of Hispanic Professional Engineers
- Vice President of the Student Culinary Association at UAH.

HONORS

- UAH Rising Student Leader of the Year.
- UAH President's List (4.0 GPA in a semester, achieved 6 semesters).
- UAH Dean's List (3.5 GPA in a semester, achieved every semester).
- Phi Kappa Psi Foundation District IV Academic Excellence Scholarship Recipient.
- UAH Homecoming King, representing the UAH Service and Civic engagement student organization.
- UAH ACM Hackathon Best Presenter Award.