

Scout Hernandez
<https://scouthern.github.io>
Graduate Research Assistant
scout.hernandez@okstate.edu

EDUCATION

Oklahoma State University, Stillwater, OK
Masters in Mechanical and Aerospace Engineering, 2021-Present
-Pilot Planning and Product Interactions
-Aviation / Engineering Operations Analysis

Oklahoma State University, Stillwater, OK
Dual Bachelors degrees in Mechanical Engineering and Aerospace Engineering, 2018-2021
-OSU Regents Distinguished Transfer Scholar
-AT&T / OSU Presidential Transfer Scholar
-CEAT Undergrad Research Scholarship

RESEARCH EXPERIENCE

Weather Intelligent Navigation Data and Models for Aviation Planning Research Assistant, Oklahoma State University, OK.

Description: The project's goal is to identify and address challenges encountered by UAS and GA pilots when using weather products at every stage of flight

Responsibilities:

- Conducting surveys and focus groups for UAS and GA pilots regarding their flight procedures and weather product preferences.
- Analysing given data and identifying critical weather information needs for GA pilots and UAS operators.

Laboratory: Aviation Engineering Operations aNalysis (AEON).

- Quantitative Survey Analysis
- Qualitative Data Analysis

Optimal Duct Design for removable fin-tube heat exchanger

Undergraduate Research Assistant, Oklahoma State University, OK. Summer 2019

Description: The project's goal was to design and assemble a fin-tube heat exchanger duct assembly for collecting high-fidelity experimental data.

Responsibilities:

- Designed and modeled an optimal duct for the heat exchanger assembly using Solid-works.
- Developed a procedure for assembly and disassembly of the duct for accommodating novel pipe designs.

High-powered rocketry aerospace system design

Undergraduate Capstone Design Project, Oklahoma State University, OK. Spring 2021

Description: The project was aimed at launching a two-stage rocket reaching at least 8000 ft AGL for Argonia Cup competition. The rocket also needed to recovered in a re-flyable condition and to recover the payload safely to a predetermined location on the rocket range.

Responsibilities:

- Was the team lead/captain for the rocket team.
- Designed the two-stage rocket using OpenRocket for given constraints and objectives.
- Built the 2 stage rocket assembly and tested stage, payload separation mechanisms.
- Integrated telemetry and GPS links to ground station for tracking.

PROJECTS

Component Interface and Engine Cycle Design for 100N gas-turbine engine

Responsibilities:

- Demonstrate an understanding of major engine components including inlets, fans, compressors, combustors, turbines, mixers, afterburners, and nozzles.
- Complete engine design, particularly component geometric and thermodynamic validity
- Communicate between component teams to ensure engine design meets criteria.

Design and launch a high-powered rocket

Responsibilities:

- Successfully designed, manufactured, and launched a rocket for spacecraft design course.
- Successfully recovered payload and rocket in a re-flyable state.

RELEVANT COURSE WORK

- Advanced Propulsion
- Configurational Aerodynamics
- Spacecraft Design
- Guidance Navigation and Control

Teaching Experience

- MAE 3153 Introduction to Mechanical and Aerospace Engineering Design

Responsibilities:

- Advise students on project designs and ideas
- Evaluate reports and designs
- Instruct and lead students towards success in design ideas

- ENGR 1332 Engineering Design with CAD for Mechanical and Aerospace Engineering

Responsibilities:

- Advising undergraduate students on CAD designs during office hours.
- Evaluating student performance in CAD modeling assignments and projects.
- Assisting/helping conduct design sessions in CAD laboratory

SCHOLARSHIPS AND ACHIEVEMENTS

- OSU Regents Distinguished Transfer Scholarship
- AT&T/OSU Presidential Transfer Scholarship
- CEAT Undergrad Research Scholarship
- Captain of winning team for Argonia Rocketry Cup (2021)
- Oklahoma Center for Advancement of Science and Technology (OCAST) scholarship
- NASA Community College Aerospace Scholar (2018)
- Level 2 High-powered rocketry certification

POSITIONS OF RESPONSIBILITY AND BROADER IMPACT

- Adjudicator for Oklahoma State Science and Engineering Fair (2022-2023)
 - Evaluate and critique projects of young and enthusiastic school students.
 - Guide and encourage future engineers towards opportunities in engineering and other STEM based fields.
- Argonia Rocketry Cup Team captain
 - Validate the experimental data with the numerical model.
 - Design, build, and launch the rocket used in the competition
 - Communicate with the vehicle team to ensure both rocket and vehicle teams meet criteria.
- American Institute of Aeronautics and Astronautics Executive member (2019-2020)
- Engineers Without Borders Executive member (2019-2020)
- Ambassador from school of Mechanical and Aerospace Engineering for CEAT (College of Engineering, Architecture and Technology) Discovery Day
 - Instructed and guided high-school students on flying through flight simulators.
 - Introduced high-school students to virtual reality flight simulators.
 - Encouraged participation from high-school students and represented AEON lab, OSU to future engineers.

RESEARCH WORK AND PRESENTATIONS

- *Conference paper in progress - Defining Fore Enhanced Products for UAS and GA Stakeholders: A Qualitative Study*
- *Creese, A., Vuppala, R. K., Hernandez, S. D., & Rouser, K. P. (2023). Engine cycle design and Integration of Component Interfaces of a Micro Turbojet Engine for Additive Manufacturing. In AIAA SCITECH 2023 Forum (p. 1465)*
- *Presented at the Women in Science Conference, Oklahoma City, OK (2022)*
- *Presented a poster at the 4th annual MAE graduate research symposium, OSU, Stillwater, OK (2022).*
- *Presented at the MAE undergrad research symposium, OSU, Stillwater, OK (2020).*

PROFESSIONAL MEMBERSHIPS

- Tripoli High-powered rocketry Level 2 certified member
- American Institute of Aeronautics and Astronautics Member
- OSU Space Cowboys, High-powered Rocketry Club, Oklahoma State University
- Women in Aviation member
- Women in Aerospace member
- AnitBOrg
- Engineers Without Borders member
- Hispanic Scholarship Fund (HSF) scholarly member

PROFESSIONAL REFERENCES

- Dr. Nicoletta Fala,
Assistant Professor,
Mechanical and Aerospace Engineering,
Oklahoma State University.
Email: nfala@okstate.edu, Ph. no: 405-744-752.
- Dr. Saad Saleem,
Energy Consultant,
Guidehouse
Brooklyn, NY.
Email:saad.saleem@okstate.edu
- Dr. Charlotte Fore,
Manager Grad Program and Research,
Mechanical and Aerospace Engineering,
Oklahoma State University.
Email: charlotte.fore@okstate.edu, Ph. no: 405-744-5900.