JALANI EANOCHS

Computational mechanical engineer dedicated to applied research in finite element analysis and the active development of solver software for this purpose.

Email: jalanieanochs@gmail.com

Technical Skills

Technologies: ANSYS, Linux, Git, AWS (EC2, S3), Docker, Embedded Programming
Languages and Frameworks: C/C++, Python, NumPy/SciPy/Matplotlib (Python), Flask (Python), Tkinter (Python), SFML/ImGUI (C++), ESP32 MCU (C/C++)

Education

Duke University, Durham, NC *M.S. Mechanical Engineering* Expected Grad. May 2026
Current GPA: 3.2

Tuskegee University, Tuskegee, AL *B.S. Mechanical Engineering* Grad. May 2024
Cum. GPA: 3.938

Abeka Academy, Pensacola, FL *High School Diploma* Grad. May 2020
Cum. GPA: 4.0

Engineering/Programming Projects

Remote IoT Rover Controller – 2024

- Developed for the Experimental Methods Capstone class at Duke University
- Used nodal network of ESP32 to control drone
- ESP32 acted on a slave-master model; master node sent the webpage that is used to control the system; slave nodes connected to various sensors and motors for actual control
- Server built in C++; webpage built in HTML/CSS/JavaScript
- Duke Capstone Link

Tessella Battery FE Analyzer – 2024

- Developed as part of a graduate research project
- Built completely in Python, it is able to perform a full FE analysis on a battery modeled as a Voronoi structure
- Currently uses a simple model based upon Fick's Laws of Diffusion; equations are manually assembled using SFePy
- Using the Tkinter API, a GUI is provided on top of the pipeline

Arduino-based Temperature Data Acquisition System (ThermaLens) – 2023

- Developed as a request from Tuskegee professor to develop a new laboratory experiment
- Uses an Arduino board and a thermistor to measure temperature
- Introduces students to basic coding in C++, embedded systems, and data acquisition
- Developed a GUI application using Python Tkinter API to read data from the Arduino board
- GitHub Link

Experience

Graduate Researcher *Guilleminot Group* August 2024-Present
Duke University, North Carolina

- Assigned to project researching battery ion concentrations
    - Develop GUI and computational pipeline to perform FEA analysis on a generated Voronoi tesselation
    - Had to give fully formatted research presentations every other week

Undergraduate Researcher *Chevron Additive Manufacturing Laboratory* August 2023-May 2024
Tuskegee University, Alabama

- Responsible for CFD analysis of drone propeller using ANSYS and ANSYS Fluent
    - First time using ANSYS; was able to set up and analyze full simulations within a month, at 10 hours per week
    - Tasked with finding the velocity and pressure gradients of the propeller as it passes over the drone arm.
- Helped to solve a problem with physical validation of drone propeller
    - Procured an essential CAD file of a propeller through connections at NIAR
    - Solved a two-year problem for the lab

Engineering Intern *National Institute for Aviation Research* May 2022-May 2024
Wichita, Kansas

- Participated in ITAR Digital Twin Project
    - Responsible for meshing entire platform systems using Altair HyperMesh and ANSA, including parts used in the Digital Twin Project.
    - Partly responsible for setting up simulations using LS-DYNA and validated the simulation against experimental data using Microsoft Excel and Altair HyperView.
- Meshed a vital and proprietary Cessna 135 part model during the 2022-2023 school year.
- Have meshed over 200 components during employment
- Future Innovators Website Link

Student Reviewer *Clemson University* January 2022-August 2022
Clemson, South Carolina

- Collaborated with professors and other students to proofread and review an open-source robotics textbook
- Personally conducted extensive research into educational theory and curriculum design
- Was requested by the private investigator to continue the program to publish a ASEE paper on collaborative development
- Helped in the writing of the abstract

REACH Peer Tutor *Tuskegee University* August 2021-May 2023
Tuskegee, AL

- Independently set up tutorial session and private tutorial sessions for at-need students
- Organized general recitation meetings for Thermodynamics I and Dynamics in 2022 after requesting permission from professors
- Tutored over 40 engineering students and over 30 students in other majors in subjects of Calculus I to III, Differential Equations, Dynamics, General Physics I and II, and Thermodynamics I and II.
- **Personally recommended as Physics I tutor by professor while attending the class**

Volunteer Experience

Teacher Assistant for Measurements and Analysis Laboratory January 2023-May 2024
Tuskegee University, Tuskegee, AL

- Responsible for conducting experiments for the students
- Communicated with students regarding the quality of their lab reports
- Charged with designing experiments for future classes
- Teach concepts related to the experiments
    - Includes fluid mechanics principles such as Bernoulli's Principle and mathematical concepts such as linearization

Substitute Bible Class and Sunday School Teacher December 2018-December 2021
Bethlehem Missionary Baptist Church, Cannonsburg, MS

- Substitute for teachers in their absence
- Teach the adult class the selected material for the lesson

Auxiliary Church Pianist December 2018-December 2021
Bethlehem Missionary Baptist Church, Cannonsburg, MS

- Constantly prepared songs if church pianist was unable to play for an event
- Played hymns and songs at the beginning of Sunday School and Bible class

Teacher's Assistant August 2017-November 2019
Saturday Science Academy at Alcorn State University, Lorman, MS

- Assisted teachers in teaching and tutoring middle school students in mathematics
- Was recommended unofficially due to proficiency in math noticed while in the program
- Would occasionally teach certain parts of material to students independently if teacher was unfamiliar with content or was absent

Awards and Honors

- Tuskegee University Dean's List (2021-present)
- Tuskegee University Eminent Scholar (2020-present)
- Abeka Academy's President's, Academic Achievement and Academic Honors Awards (2020, graduation)
- First Place in Mathematics Section at Saturday Science Academy Science Fair (2016 and 2017) [Transcendental Properties of Pi and Displacement in the Euclidian Fourth Dimension]
- First Place in Alcorn State University Piano Competition (2012)
- Student of the Year, TUBE Conference (2024)
- Summa Cum Laude (2024)

Additional Information

- "Creating Open Textbooks: Incorporating Student Voices. STEM for All Multiplex." Wiitablake, L.M., Eanochs, J., Hardin, C., Mowery, L., Rao, A., Samuels, L., Williams-Mattison, S., Boyer, D.M., Wu, Y. (2022, May). https://multiplex.videohall.com/presentations/2603