

# JALANI EANOCHS

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

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## 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 tessellation
  - 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**

### Student Counselor, Mississippi Summer Transportation Institute, Alcorn State University

May 2021 – July 2021

Lorman, MS

- Mentored program participants in finding and applying for jobs
- Organized choir for ending program

**Community Worker**

*Bethlehem Baptist Church*

May 2020-June 2020

*Cannonsburg, MS*

- Prepared emergency meals during the onset of the COVID-19 pandemic
- **Learned to operate alongside team in the restricted conditions created by pandemic**

**Church Pianist**

*Mount Olive Baptist Church*

June 2019-July

2019

*Lorman, MS*

- Played songs for youth choir assembled during vacation Bible school
- Rapidly learned songs to teach to inexperienced group of singers.

## 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>