

Jacob Vaught

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EDUCATION

University of South Carolina, Columbia, SC

Bachelor of Science in Mechanical Engineering

Bachelor of Science in Electrical Engineering

Bachelor of Science in Computer Engineering

Dean's List 2x

SC Palmetto Fellows, Dean's Scholar, USC STEM Supplement

Anticipated Graduation: May 2025

Major GPA: 3.71

Major GPA: 3.58

Major GPA: 4.00

Overall GPA: 3.59

Midlands Technical College, Columbia, SC

Certificate in Engineering Sciences

Dean's List 2x

President's List 2x, Graduated with High Honors: Magna Cum Laude

January 2019 - May 2021

Overall GPA: 3.89

WORK EXPERIENCE

Westinghouse Electric Company LLC.

Hopkins, SC

Summer Intern

May 2022 – August 2022

1. Used CAD to model parts to prevent lateral movement of torque testing rig, which resulted in a more accurate result
2. Researched methodology for tensile tube testing and found a suitable ASTM standard
3. Developed 4 Python programs to do a simple data analysis on grid growth in nuclear fuel assemblies
4. Used CAD to calculate POSITY(Porosity) of Combustion Engineering™ Grid Straps

CLASSROOM EXPERIENCE

Dr. Lang Yuan's Research Laboratory

Columbia, SC

Undergraduate Research Student

August 2021-Present

1. Develop FEA models for Laser Powder Bed Fusion Additive Manufacturing (LPBFAM)
2. Use and modify professor's models to predict distortion in LPBFAM with a variety of parameters
3. Use ABAQUS, a finite element analysis software, to produce distortion models
4. Review research articles to understand the theory behind lab topics

Dr. Austin Downey's Research Laboratory (ARTS Lab)

Columbia, SC

Undergraduate Research Student

February 2022-Present

1. Develop FEA models for use in vibration analysis of complex structures
2. Worked to switch team from Abaqus to Code-Aster, an open-source alternative
3. Used CAD to model multiple items
4. Worked with TensorFlow to create a simple AI

EMCH 290(Thermodynamics) Teacher's Assistant

Columbia, SC

Teacher Assistant for Dr. Azadeh Sepahvandi

August 2022-Present

1. Update PowerPoint slides to use more aesthetic design cues and include more topics from textbook
2. Develop 6 assignments and 6 quizzes for the class and develop solutions manuals
3. Grade approximately 30 students' submitted work, including tests, within 1 week of submission.

LEADERSHIP EXPERIENCE

American Society of Mechanical Engineers

Columbia, SC

Secretary

February 2022 – Present

1. Schedule rooms for bi-weekly meetings and recorded notes
2. Respond to emails from faculty and companies
3. Oversaw first major remodeling of ASME lounge room since 2005
4. Design CAD models for the Tiger Burn and ran FEA analysis on it
5. Develop 3D printed parts to demonstrate the structural integrity of the Tiger Burn structure

Unofficial Peer Mentor

Columbia, SC

Tutor

August 2020 – Present

1. Provide guidance and aid approximately 50 peers in classroom and informal settings
2. Tutor those who struggled with class material by drawing on own knowledge of subjects to clarify and assist others when possible.
3. Assist peers in a wide variety of programming and other class-related problems.

PROJECTS

Improvement to LPBFAM Distortion Prediction

May 2022-August 2022

- Modified Dr. Lang's current software for Distortion simulation to allow for quadrant sectioning compared to the older method of simulating LPBFAM layer by layer.
- Presented findings at Undergraduate Summer Research Symposium

Java Chess Simulation

July 2021

- Developed a chess game simulation with Java, and modified the design through multiple iterations to match current Graphical Interface standards in Microsoft Windows
- Achieved a networking functionality between 2 computers on the same network, However, the user did have to know the IP address of the other computer.
- Accomplished the ability to have the program swiftly and accurately predict player moves one step ahead

ASME Tiger Burn

Fall 2021 & 2022

- Built a large wood structure for use in the annual Tiger Burn. Used FEA to complete a structural analysis on the structure and determined most effective cuts for the wood to use in the structure.
- Guided and instructed peers on how to construct the structure. Helped design the structure with Creo Parametric and predetermined the angle of cuts used in each piece of the structure.
- Learned how to proficiently use power tools, including Miter saw, Jigsaw, and electric drill

Vinyl Record Player

June 2020

- Produced a record player after a week of planning and designing. It was produced with a wood material to create a vintage style and used a 5V USB port to power it.
- Had stereo sound and used a general-purpose needle for sound. The conductor for audio was a lower quality wire, however, the amplifier was able to filter out most sound discrepancies.
- Used two 1-inch tweeters for sound and used a simple DC motor for rotating the turn table at a constant speed. The motor speed was controlled with a low-cost Pulse Width Modulation (PWM) device.

RELEVANT COURSES

General:

Calculus 1, 2, 3 & Diff. EQ.
English 1 & 2

Chemistry 1 & 2
Physics 1 & 2

Statistics for Engineers

Mechanical:

Kinematics
Mechatronics
Mechanical Laboratory 1
Finite Element Analysis

Computer-Aided Design
Statics and Dynamics
Solid Mechanics
Thermodynamics

Applied Numerical Methods
Machine Design

Electrical:

DC Circuits
AC Circuits 1 & 2
Electrical Lab 1

Electromagnetics
Microelectronics
UNIX/Linux

Digital Logic Design
Computer Architecture
Algorithmic Design 1 & 2

SKILLS

General:

Microsoft Office Suite
Problem Solving
Google Suite

CAD
FEA
Additive Manufacturing

Circuit Analysis
Independent Research
Programming

Mechanical:

AutoCAD
AutoDesk Inventor
TinkerCAD

SOLIDWORKS
Creo
Abaqus

Code-Aster
Arduino IDE

Electrical:

LT-Spice
MATLAB

Python
Java

Logisim
Mars-MIPS(Assembly)