Daniel Ormsbee

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SUMMARY

Mechanical engineering & molecular biology student with a record of exceptional achievement, a reputation for innovative thought, analytical/critical thinking, and a passion for hard work. Additional skills include:

- Immunology
- Organic Chemistry
- Biochemistry
- MechEng Labs I & II
- Fluid Mechanics
- Thermodynamics
- SolidWorks
- AutoCAD
- MATLAB
- Nanotechnology in Medicine
- Genetics
- HPLC and Liquid Chromatography
- Heat Transfer
- Kinematics of Machines
- Mechanical Design
- Python
- Microsoft Excel
- Implicit Equation Solvers

EDUCATION

Cedarville University - *an ABET-accredited comprehensive university in southwestern Ohio serving more than 5,000 undergraduate and graduate students*

BS Mechanical Engineering; GPA: 3.50 Anticipated 05/2026

BS Molecular Biology; GPA: 3.60

Honors: Dean's List (all semesters); President's Scholarship

EXPERIENCE

Work Experience:

AFRL/STI Tech Customizable Pilot Helmet - Senior Design Team Cedarville, OH

Team Lead - Computational Pipeline SME 08/2024–05/2025

- Created project timeline, objectives and tasks for 4-person engineering design team.
- Design, built, and implemented computational systems for facial scan data analysis and head mass calculations using machine learning, regression, and data-management principles (python, MATLAB, statistical analysis).
- Designed, built, and tested pilot helmet test-bed with movable Center of Gravity (CG) for AFRL customer.
- Communicated and managed product development with STI Tech contacts and engineering team.

Wake Forest Institute for Regenerative Medicine (WFIRM) Winston-Salem, NC

NIH sponsored Summer Scholar (30-40hrs/week) 05/2024–08/2024

- Completed novel research on the scale-up of Urinary Stem Cell (USC) culture for the extraction of exosomes as a future therapeutic for Chronic Kidney Disease (CKD).
- Proficiently used ELISA, Western Blot, mammalian cell culture, and protein purification methods.
- Presented research at NIH NIDDK undergraduate research symposium in Charlottesville, VA.
- Directed future research efforts using preliminary purity and yield data.
- Collaborated with nanoparticle characterization laboratory.

Campus Experience: Student Government Association (SGA) Cedarville, OH

SGA Vice President (10-20hrs/week) 08/2023–05/2024

- Co-led and managed an organization of 36 people with a yearly budget of over $100,000.
- Responsible for more than 60 projects and events under SGA's purview. .
- Met weekly with the Student Life Programs VP to address and communicate issues and areas of concern on behalf of the student body.
- Spoke to 4,000 undergraduate students on a weekly to bi-weekly basis as a part of the campus chapel programming.
- Led a restructuring and optimization effort for SGA delegated to me by the Director of Campus Experience which included writing new procedures, the consideration of position eliminations, and the reallocation of financial and human resources

Valent Biosciences Osage, IA

Process Engineering Intern (40hrs/week) 05/2023–08/2023

- Designed and executed a $1-2 million value-add (up to 10 million with capital investment), process-improvement parametric study to determine parameters influencing separation resolution in proprietary, production ion-exchange columns that involved over: 40 elutions, 1000 elution samples, and 500 HPLC samples.
- Completed over 250 hours of laboratory protein purification and bioprocesses analysis using analytical and organic chemistry methods, ion-resin liquid chromatography, and High-Performance Liquid Chromatography.

Barbaricum Dayton, OH

Intelligence Recruiting Intern (30hrs/week) 05/2022–08/2022

- Created, managed, and analyzed over 1000 resumes utilizing Boolean search strings, project management software, Excel, and databases for DOD contracting.
- Developed new Excel spreadsheets and dashboards to better track recruiting metrics

Structural CAD Drawings (Freelance) Cedarville, OH

Contracted by building owner to create structural drawings for Amish contractor 06/2022–06/2022

- Modeled wall, fasteners, joints, and beams using SolidWorks for permit approval

OPG LLC Cedarville, OH

Project Specialist 05/2017–Present

- Served on a team that maintained over 15 rental properties
- Learned the inner workings of the real estate and rental business (i.e., mortgages, percentage returns, cost/benefit analysis, project management, etc.)
- Led carpentry projects involving the use of traditional woodworking tools (band saw, table saw, lathe, various jigs, and various joining techniques)

Projects and Publications: Cedarville, OH

Complete Projects and/or Publications: 08/2021–Present

Mechanical Engineering Labs

- Wrote over 12, 40+ page laboratory reports covering projects in: steady-state heat transfer, vibration modes of rigid bodies, 2D stress analysis of pressure vessels, refrigeration systems, pipe flow, and heat treatment of engineering alloys.
  - Refrigeration:
    - Conducted 5 experiments on the refrigeration cycle (found in AC units, refrigerators, freezers, etc.).
    - Analyzed how the cycle compensates for adverse or varying conditions using the First Law of Thermodynamics.
    - Completed a parametric, engineering model of the refrigeration system
  - 2D Experimental Stress Analysis using Strain Gauges:
    - Conducted a stress experiment on a pressurized tank using strain gauge rosette.
    - Conducted error reduction method to reduce five types of experimental error.
    - Modeled the stress in the tank, found tank width, and found tank burst pressure using von Mises failure criterion.
  - Pump and Pipe Flow Lab:
    - Conducted several experiments on pump power and behavior as well as several experiments evaluating flow in a pipe system.
    - Predicted pressure drop and needed power using an engineering model.
    - Validated and improved engineering model with experimental results.
  - Vibration Modes of Rigid Bodies:
    - Conducted 3 experiments on the vibration modes of a one-dimensional rigid body.
    - Analyzed sinusoidal vibration data to find 3 resonant frequencies and model the vibrational response at those frequencies using sinusoidal equations.
    - Applied fourier transform to data to find the vibrational response in a single experiment.

- The above are notable mentions from the laboratory class. All experiments involved experimentation, analysis, creating an engineering model, and reporting on experimental results and model accuracy. The median page count was 40-pages.

NASA Student Launch Team

- Volunteered with the NASA student launch team by: modeling a 3D printed test bed for camera extension and leveling mechanism and assisting with the documentation of parts, masses, and finances using Excel.

Computational Methods Final Project "Predicting the path and impact of a dynamic projectile using numerical methods"

- Developed MATLAB code in order to accurately model the flight path of a projectile while considering adverse terrain conditions.
- Utilized various numerical methods such as Monte-Carlo simulations, gradient descent methods, linear interpolation methods, and matrix manipulation methods (Gauss-Seidel, Matrix Inverse, etc.)

Academic Journal Article

"Domestication Syndrome in Animals: Evaluating the Trajectory of Domestication Syndrome Research"

- Wrote and published a 7 page, peer-reviewed journal article on domestication syndrome with over 60 sources and presented a conference poster.

Statics and Mechanics Bridge Project

- Designed, Built, and Analyzed an efficient bridge using AutoCAD, element and point of failure analysis, and glue which held over 200 pounds.

Dynamics: Modeling Human Kinetics

- Completed a rudimentary analysis of human kinematic motion and impulse
- Used kinematic, impulse, and momentum equations to analyze human movement on video
- Submitted a report detailing our findings, derived equations, methods, and findings.

Gathering Plant-Care Data: Python Project

- Created a web scraping and data analysis project using bs4 and requests libraries to collect and analyze plant-care data for personal indoor gardens.

Cardboard Canoe Competition

- Placed 2nd out of 33 teams working with a 4 person team using limited resources.

Freshman Impromptu Design Competition

- Placed 2nd out of 150 competitors in spontaneous design competition to build a tower out of 3 popsicle sticks, 2 straws, and 2 rubber bands.

In-Progress Projects and/or Publications

Journal Article Web-scraper, Summarizer, and Prioritize (python)

- Built a python application which collects, compiles, analyzes, and summarizes journal articles from a given publisher in my inbox. Uses Gmail API, bs4, scrapy framework, Langchain, Open AI LLMs, and Pinecone.
- Currently two-thirds complete.

Paused or Incomplete Projects and/or Publications

In-Atmosphere Sequential Ion Thruster Research

- Personally initiated research project to analyze/investigate the costs/benefits of the addition of sequential ion-thrusters to an in-atmosphere ion thruster design.
- Completed background research phase, but ran into trouble getting faculty backing and support.

AI Peptide Folding Comparison Research with Dr. Mohan Pereira

- Using ChimeraX software and AlphaFold/ColabFold machine learning models to compare experimental data with machine learning predictions.
- Integrating experimental data provided by Dr. Mohan Pereira and his research colleagues.
- Completed Background Research and preliminary experimentation, but did not make much headway. The software we were planning to use did not have the capability we were hoping for.

ACTIVITIES

Cedarville University

Sophomore class Vice-President 2022-2023
Intramural Sports 2021-Present
Club Rugby 2021-2022

Cedarville High School

Pole vault record holder and state-level competitor, 2021
(Broke the 56-year-old school record and finished 15th in the state)
Male lead in “Meet Me in St. Louis,” 2021
Quiz Bowl (interscholastic)
Leading scorer and First Team All-Conference, 2021
Conference MVP, 2020
First Team All-Conference, 2019
Volunteer geometry teaching assistant, 2020-2021

Skills

Biology Skills	Engineering Skills	Organizational Skills
Western Blot	Python	Report Writing
Gel Electrophoresis	Excel	Presentation Creation
Ionic Resin Liquid Chromatography	Data Analysis	Public Speaking
Mass Spectroscopy with GC	Web Scraping	Leadership
Infrared Spectroscopy	LangChain, OpenAI API, Google API, and LLMs (python)	Academic Research
Protein, DNA, and RNA comparison with Gel Electrophoresis	Mathematical Modeling	Critical Thinking
HPLC	MATLAB	Problem Solving
Micropipetting	3 Axis Mill	Project Management
Serial Dilutions	Metal Lathe	Self-Starter
Organic Chemistry Lab Methods	3D printing	Creative
Amino Acid and Peptide Purification with Ion Resin LC	Solidworks, AutoCAD, Fusion 360	Innovator