Dylan Jacobs | djacobs2@swarthmore.edu | (503) 704-4583

Website: https://dylan-jacobs.github.io **GitHub**: https://github.com/dylan-jacobs **LinkedIn**: https://linkedin.com/in/dylan-t-jacobs/

Education

Swarthmore College, Philadelphia, PA Aug 2023—May 2027
Bachelors of Science in General Engineering & Bachelors of Arts in Applied Mathematics
Electrical Engineering **Teaching Assistant** for Electrical Circuit Analysis (ENGR 011) Aug 2025—present
Relevant coursework:

- Electronic circuit applications, Digital signal processing, Data structures & algorithms, Computer engineering, Mechanics
- Thermo-fluid mechanics, Ordinary & Partial differential equations (PDEs), Numerical methods for PDEs, Tensor decompositions
- Real Analysis, Electromagnetism, waves, and optics with biomedical applications, electrical circuit analysis, linear physical systems

GPA: 3.97/4.00

Research and work experience

Advanced Materials Intern & Research Assistant – US Naval Research Laboratory, Washington, DC May 2025-Aug 2025

- Developed Arduino-controlled liquid nitrogen (LN2) dispenser comprising two thermocouples and a relay-controlled solenoid valve.
- Created graphical-user-interface and data-logging system interfacing between LN2 dispenser and computer via serial communication.
- Measured thermal diffusivity and specific heat of thermoelectrics using laser flash analysis (LFA) to determine thermal conductivity.
- Cut, coated, and prepared thermoelectric and semiconductor samples for LFA and Seebeck analysis.
- Presented research updates to NRL scientists and engineers, wrote standard operating procedures for the LN2 dispenser and LFA.
- Learned fundamentals of nanomaterial science, especially regarding crystal growth, chemical bonding, and electron physics.
- Introduced me to semiconductor and solid-state physics; relevant topics included n and p-type doping, electron bands, p/n junctions, diodes, transistors, and thermoelectrics.

Applied Mathematics Research Assistant – Swarthmore College Mathematics, Philadelphia, PA Jan 2024-present

- Utilizing principles of computational fluid dynamics and numerical methods to research high-order accurate methods for time-dependent partial differential equations (PDEs), plasma/kinetic models; developing MATLAB code to implement novel PDE solvers.
- Developing a novel low-rank, structure-preserving integrator for the Vlasov-Fokker-Planck equation in cylindrical coordinates.
- Presented low-rank, implicit Vlasov-Fokker-Planck solver in cylindrical coordinates at SIAM NNP 2025 conference poster session.
- Presented research results at 2024 and 2025 Swarthmore *Sigma Xi* poster session.

Electrical Engineering Research Assistant – Swarthmore College Engineering, Philadelphia, PA Nov 2023—May 2024

- Researched electrical/aerospace technology behind wind-energy devices to develop an oscillatory wind-energy harvester.
- Used MATLAB and Arduino to record and analyze voltage data from electromagnetic induction.
- Used Arduino, MATLAB, and ViscousFlow to simulate vortex-shedding patterns and oscillatory electrical induction power output.

Software Engineering Summer Intern - Oregon Health and Science University, Portland, OR Jun 2022—Aug 2022

- Used Kotlin to develop Android app that receives multi-channel audio signals from a Bluetooth stethoscope to detect heart murmurs.
- Presented machine-learning paper to the lab's reading group.
- Attended and presented weekly project updates and machine learning meetings

Data Analyst Intern - **Oregon Health and Science University,** Portland, OR Jan 2021—Jun 2021

- Used statistical models in Python to predict the time and date of female patient parturition.
- Attended weekly machine-learning presentations; analyzed large biomedical datasets in Python.

Projects

AI Python Stock Trading Algorithms, Algorithm and machine-learning development project, link Mar 2022—Feb 2023

- Created Python algorithms to trade stocks based on various quantitative metrics.
- Gained experience in Python, artificial intelligence, automated decision making.

Generative Adversarial Network (GAN), Machine-learning project, link Mar 2022—Feb 2023

- Implemented Python AI algorithm trained on abstract art datasets to create computer-generated artwork.
- Gained experience in Python machine-learning, web-scraping, realistic image generation.

FireSale, Mobile Android app development project, link Aug 2020—Jun 2021

- Used Java and AWS to develop Android app to simultaneously reduce food waste and hunger.
- Learned and improved skills in Java, AWS backend, user authentication, database querying, asynchronous request handling.

Extracurriculars and Professional Skills

Swarthmore Varsity Men's Soccer (left/right midfield, forward) Aug 2023—present

Programming Languages: Python, MATLAB, Java, C++, HTML/JavaScript, LaTeX
Software: VSCode, MATLAB, Arduino, Git, SolidWorks, AutoCAD, MS Office
Languages: Spanish (Fluent), Global Seal of Biliteracy (2022)

Awards and Scholarships

Delaware Valley Engineers Undergraduate Scholarship, Delaware Valley Engineers Society Feb 2025
Donna Prentice Memorial Scholarship, American Society of Civil Engineers Feb 2024
National Merit Scholarship, National Merit Scholarship Corporation Apr 2023