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

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Education

Swarthmore College, Philadelphia, PA Aug 2023—May 2027

Bachelors of Science in General Engineering & Bachelors of Arts in Applied Mathematics

Relevant Coursework:

- Electrical circuit analysis, digital signal processing, linear systems, data structures & algorithms, computer engineering, mechanics
- Ordinary & partial differential equations, real analysis, numerical methods for differential equations, tensors reading group
- Electromagnetism, waves, and optics with biomedical applications

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.
- Used Python to create graphical-user-interface and data-logging system that interfaces between LN2 dispenser and computer through serial communication.
- Facilitated laser flash analysis (LFA) measurements to measure thermal diffusivity and specific heat capacity, which we used with sample density to determine thermoelectrics' 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.
- Taught me 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.
- Presented research results at 2024 Swarthmore *Sigma Xi* poster session.
- Developing a novel low-rank, structure-preserving integrator for the Vlasov-Fokker-Planck equation in cylindrical coordinates.

Electrical Engineering Research Assistant – Swarthmore College Engineering, Philadelphia, PA Dec 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 oscillatory electrical induction power output.

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

- Developed mobile Android app in Kotlin; 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, artificial intelligence, 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.
- Improve skills in Java, AWS backend, user authentication, database querying

Extracurriculars

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

Professional Skills

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