Julian Calder

julian@juliancalder.dev | linkedin.com/in/julian-calder | juliancalder.dev

Education

Middlebury College September 2020 – May 2024

Bachelor of Arts in Computer Science and Physics, Summa Cum Laude, Honors in CS *Middlebury, VT*

- Relevant Coursework: Advanced OS, Algorithms, Computer Architecture, Data Structures, Programming Languages, Quantum Computing, Software Development, Systems Programming, Theory of Computation

DIS Stockholm August 2022 – December 2022

Program Focus: Engineering Sustainable Environments in Scandinavia *Stockholm, Sweden*

Experience

Computer Science Teaching Assistant September 2023 – May 2024

Middlebury College *Middlebury, VT*

- Taught Python to introductory CS students and debugged student code (Fall 2023)
- Helped students understand the fundamentals of computer architecture and C programming (Spring 2024)

Power Electronics Research Intern June – August 2023

National Renewable Energy Laboratory *Golden, CO*

- Fabricated novel electric vehicle power inverter module with a custom-made hot press which wasc controlled and automated via a comprehensive GUI application written with Tkinter in Python
- Developed and tested a general-purpose data acquisition program in Python built around the Phidget platform of programmable sensors and controllers
- Supported researchers across multiple groups by developing individually-tailored equipment monitoring, control, and data acquisition programs to streamline experimental workflows and improve safety

Materials Science Research Intern May – August 2022

National Renewable Energy Laboratory *Golden, CO*

- Pursued creation of a novel crystalline structure by synthesizing over 30 growths of various layered thin-film nitride materials using a high-vacuum magnetron sputter deposition chamber
- Characterized film thickness, structure and composition with X-ray diffraction, X-ray fluorescence and X-ray reflectometry techniques

Projects

Classifying Quantum States of Matter with Machine Learning | *Physics Senior Work* February – May 2024

- Used Markov chain Monte Carlo program to generate simulated low-temperature magnetic spin configurations
- Explored training fully-connected and convolutional neural networks on spin configuration data to predict the temperature at which magnetic phase transition occurred
- Presented results at 2024 Middlebury Spring Research Symposium and in final project report (available at juliancalder.dev/report.pdf)

middmarkit | *Software Development Class Project* February – May 2023

- Early contributor to `middmarkit`, an online resale platform for the Middlebury community built with React
- Implemented third-party image storage API from Cloudinary to allow users to upload listing photos to SQL database, as well as adding listing editing functionality after creation
- Utilized software development best practices, building app from user stories and feedback with biweekly sprints and rigorous unit testing

Leadership

Men's Team Co-Captain September 2023 – May 2024

Middlebury College Men's Club Crew Team *Middlebury, VT*

- Organized team practices daily as well as managing equipment maintenance, transportation and other general operations for team of over 60 athletes

Technical Skills

Languages and Systems: C, Python, Javascript, React, HTML, CSS, OCaml, Prolog, ARM Assembly, Mathematica, Labview; FreeBSD, Full-time Linux user