Julian Calder

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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, Computational Physics, Data Structures, Programming Languages, Quantum Computing, Software Development, Systems Programming

DIS Stockholm August – 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*

- Developed automated monitoring and control software in Python for custom-built laboratory equipment used to fabricate novel electric vehicle power inverter modules
- Collaborated on the creation of a comprehensive general-purpose data acquisition program integrating a variety of modular sensors and microcontrollers in a streamlined graphical interface
- Supported researchers across multiple divisions by providing tailor-made data acquisition and control applications for their unique experimental setups

Materials Science Research Intern May – August 2022

National Renewable Energy Laboratory *Golden, CO*

- Investigated a novel layered crystalline structure in nitride-based thin films produced in a high-vacuum magnetron sputter deposition chamber
- Characterized 30+ thin films with profilometry, X-ray diffraction, and X-ray fluorescence techniques

Projects

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

- Utilized 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 to allow users to upload listing photos to SQL database, as well as adding listing editing functionality after creation
- Utilized software development best practices, employing comprehensive code reviews, source management 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

C, Python, Javascript, React, HTML, CSS, OCaml, Prolog, ARM assembly, Mathematica, Labview, Make, Shell scripting, FreeBSD, Linux, Git, GitHub, Agile methods, CI/CD, Object-oriented programming