

Julian Calder

Physics and computer science double major at Middlebury College, interested in the application of computer science principles to the design and optimization of physical systems. Passionate learner seeking to explore the intersection of physics, engineering and computer science for the development of sustainable technologies.

RESEARCH EXPERIENCE

Systems Engineering Research Intern, National Renewable Energy Laboratory

JUN 2023 - AUG 2023

- Developed a comprehensive GUI in Python to control a custom-made hot press used to produce novel power inverter modules for electric vehicles
- Created a general-purpose data acquisition program in Python to be distributed to the greater research community at NREL based on the Phidget platform of programmable sensors and controllers

Materials Science Research Intern, National Renewable Energy Laboratory

MAY 2022 - AUG 2023

- Synthesized novel layered thin-film nitride materials using a high-vacuum sputtering deposition chamber
- Implemented automated shutter program in LabView to demonstrate the possibility of in-situ layered film production
- Characterized film thickness, structure, and composition with X-ray diffraction, X-ray reflectometry, and X-ray fluorescence techniques

WORK EXPERIENCE

ITS Lead Computer Consultant, Middlebury College

FEB 2021 - PRESENT

- Provide IT support for thousands of faculty, staff, students and alumni in the greater college community
- Manage schedules and supervise work of 16 student consultants, ensuring client needs are addressed quickly and effectively

RELEVANT COURSEWORK

Physics: *Electricity and Magnetism, Thermo, Fluids, Waves & Optics, Relativity and Quantum Physics, Quantum Physics Applications, Applied Math for Physical Sciences, Computational Physics, Electronics for Scientists, Experimental Physics*

Computer Science: *Computing for the Sciences, Math Foundations of Computing, Data Structures, Computer Architecture, Software Development*

Mathematics: *Calculus I and II, Multivariable Calculus, Linear Algebra, Topics in Linear Algebra and Differential Equations, Intro to Numerical Analysis*

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EDUCATION

Middlebury College, Middlebury, VT

SEP 2020 - JUN 2024

B.A. Physics and Computer Science | College Scholar

GPA: 3.78 / 4.00

DIS Stockholm, Stockholm, SWE

AUG 2022 - DEC 2022

Core Course: *Engineering Sustainable Environments in Scandinavia*

SKILLS

X-ray diffraction (XRD), X-ray reflectometry (XRR), and X-ray fluorescence (XRF) material characterization techniques

Adept at **data acquisition, instrument control and automation** in Python

Experience with **Python, Javascript, C, Assembly, React, NextJS and Labview**

Familiarity with **Sketchup and Autodesk Fusion360 CAD** softwares

ACTIVITIES

Captain, Middlebury Men's Crew Team

Treasurer, Middlebury Club Nordic Ski Team

Cellist, Middlebury College Orchestra