

Alex Hadley

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Education

B.S. Computer Science

May 2022

Harvey Mudd College, Claremont, CA

GPA 3.98 / 4.00

Experience

Software Engineer

Aug 2022 – Present

Caltech – Quantum Photonics Group (Painter Lab)

Pasadena, CA

- Developed packages and tools for researchers conducting multi-qubit quantum control experiments.
- Created a Python package for defining and saving experiment parameters using Data Classes and SQLite, reducing the existing database size from 1.2 TB to 15 MB. See code at github.com/PainterQubits/paramdb.
- Built a web GUI for visualizing and editing real-time and historical parameters using TypeScript, React, Plotly, Socket.IO, Python, and Flask, providing new insight and convenience. See demo at alexhadley.net/#demo.
- Improved data management by developing a Python package for saving experiment data and metadata in JSON and netCDF files within organized directories.
- Wrote JupyterLab extensions using Python, TypeScript, and React to conveniently plot and analyze data files.

Software Engineer

Sep 2021 – May 2022

Harvey Mudd College Clinic Program – Caltech (Cai Lab)

Claremont, CA

- Collaborated with four fellow Computer Science majors to develop a web application for biologists in Long Cai's research group at Caltech to process and visualize spatial genomic data.
- Created a maps-like web interface for efficiently rendering large tissue images with overlaid spatial information using React, TypeScript, and OpenLayers, unlocking new ways to visualize and interpret the data.
- Developed serverless functions to merge, tile, and convert raw microscope TIFF images and spatial data using Python, GDAL, and AWS Lambda, improving data automation.

Software Engineer Intern

Jun 2021 – Aug 2021

Dotdash Meredith – Commerce Team

New York, NY

- Worked on an Agile Scrum team responsible for building and maintaining commerce articles visited by millions per month on websites including People, Travel + Leisure, Investopedia, and Serious Eats.
- Developed a production-ready image carousel component using HTML, CSS, Sass, and Javascript to add depth to product reviews. For example, see live on people.com/best-ice-cream-makers-8620094 (scroll to reviews).

Assistant Instructor

Jun 2019 – Aug 2019

MIT Beaver Works Summer Institute

Cambridge, MA

- Taught Python and computer vision to a class of 25 middle schoolers using Jupyter Notebook and OpenCV, culminating in an autonomous mini race car challenge.

Web Developer

Jun 2018 – Aug 2018

La Mano Pottery & Mud Matters

New York, NY

- Built an online gallery using JavaScript, jQuery, and PHP for hundreds of potters to find and view photos of different glaze combinations. Visit at lamanopottery.com/glaze-gallery (password: "Sassy").

Projects

Personal Website – alexhadley.net

Feb 2024 – Apr 2024

- Developed a portfolio website using Astro, TypeScript, and Tailwind CSS to showcase my software projects.

Helium Atom Simulation – github.com/alexhad6/DiffusionMonteCarlo

Jun 2020 – Aug 2020

- Implemented a diffusion Monte Carlo algorithm in MATLAB to approximate the ground state of a helium atom.

Galaxy Simulator – github.com/alexhad6/ParallelBarnesHut.jl

Apr 2020 – May 2020

- Built a Julia package to efficiently simulate the motion of stars in a galaxy via a parallel Barnes Hut algorithm.

Skills

Languages: Python, JavaScript, TypeScript, HTML, CSS, Sass, Julia, C++, Java

Packages & Tools: React, Vue.js, Git, GitHub Actions, SQLite, JupyterLab, Docker, Nginx