EMMA HAYES

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA **May 2024**
BS in Computational and Applied Mathematics, Minor in Computer Science GPA 3.5/4.0

SKILLS

Programming Languages: C, SML, Python (PyTorch, Matplotlib), LaTeX, Lean, Assembly, MatLab, HTML, R
Tools: GitHub, Google Colab, GDB, Slurm **Programming Skills**: OOP, Neural Networks, Parallel Computing

EXPERIENCE

Teaching Assistant, Parallel and Sequential Data Structures and Algorithms **Jan 2023 - May 2024**

- Partnering with course professors and other teaching assistants to teach a recitation, hold office hours, grade homeworks, and tutor students
- Developed skills for communicating mathematics and computer science concepts and complex algorithms

UCLA, Institute for Pure and Applied Mathematics **June - August 2023**
Undergraduate Researcher and Project Manager

- Competitively selected among 35 other students from 3000+ applicants to work on NSF funded research projects
- Research project collaborating with 3 other colleagues sponsored by AMD to implement physics informed machine learning models utilizing high performance computing systems and parallel computing

Emory University Research Experience for Undergraduates **May - July 2022**
Undergraduate Researcher

- Competitively selected for NSF funded research program in Computational Mathematics and Data Science
- Collaborated with professors to construct Residual Neural Networks and Hamiltonian Inspired Neural Networks using Python and PyTorch to predict the dynamics of ordinary differential equations
- Translated math into machine learning algorithms, completed a paper, and gave multiple presentations and talks, including a presentation at JMM in their AMS Contributed Paper Session on Computer Science

PROJECTS

Introduction to Computer Systems (in C) **January - May 2022**

- Completed multiple project-based assignments, including implementing a dynamic memory allocator (malloc), creating a proxy server, simulating a cache memory, and writing a Linux shell

Fundamentals of Programming Term Project **April 2021**

- Designed an interactive coloring app where the user can create drawings or paint premade coloring pages
- Implemented in Python with Pillow (PIL) using modules to produce different features and pages, and created an intuitive user interface

LEADERSHIP

Thrift Store (Co-founder and Finance Head) **March 2021-May 2024**

- Collaborating with a team of students and staff to establish an on-campus, student run thrift store at Carnegie Mellon to cultivate sustainable living on campus

Carnegie Mellon University Math Club (Vice President Internal) **December 2020-May 2024**

- Supporting the mathematics community through holding events and coordinating with the department, and participating in a Mentor/Mentee program

Math and CS Tutor **August 2019-May 2024**

- Instructing students in Algebra, Geometry, Calculus, and Computer Science in individual sessions
- Effectively communicating new ways of explaining concepts and presenting examples