Helena Yang

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Education

School of Computer Science, Carnegie Mellon University
Bachelor of Science - BS
Computer Science, May 2024
Cumulative QPA: 3.91/4

Relevant Coursework:

- 15-213 Introduction to Computer Systems (C)*
- 15-210 Parallel & Sequential Data Structures & Algorithms (SML)*
- 15-150 Principles of Functional Programming (SML)
- 15-122 Principles of Imperative Computation (C)
- 15-151 Mathematical Foundations of CS
- 21-325 Probability*
- 21-268 Multidimensional Calculus
- 21-241 Matrices & Linear Transformations

*Fall 2021

Skills

Languages:
Python · C · SML · Typescript/Javascript

Activities

Artist Alley Club
Women @ SCS
Rewriting the Code

Work Experience

CMU Institute for Software Research · Research Intern @ Penrose — Jun 2021 - Present

- Investigating automatic construction of unusual diagram configurations via gradient descent optimization & tangent space exploration of constraint function Jacobians.
- Reconfiguring Penrose's Style language parser, compiler, & optimizer to support automated generation of staged diagrams using Nearley.js & Typescript.

15-112 Fundamentals of Programming & CS · Teaching Assistant — Jan 2021 - May 2021

- Led weekly recitations & labs for 15 students, taught review sessions on course content for large groups, provided 1-on-1 tutoring, held solo office hours, graded homework/exams.
- Mentored 8 students through 3-week long, 1000+ line term projects.
- Organized and led mini-lecture on 3D graphics (projection, perspective rendering, shading).

National Institute of Standards & Technology · Programming Intern — Jun 2019 - Aug 2019

- Co-developed program that automated transition of 100+ scripts from Python 2 to 3.
- Improved performance of a.b. initio computational chemistry scripts using NumPy & SciPy.

Projects

2.5D Room Planner & Perspective Viewer · Fundamentals of Programming & CS, Dec 2020

- Programmed a 2.5D graphics modeling app from scratch that allows users to customize, rotate, and view furniture objects from isometric and first-person perspectives in Python.
- Leveraged projection matrices and perspective rendering matrix theory.
- Selected among 10 term projects out of ~500 to present during course lecture.

Automated Study Schedule Builder · HackMIT, Sep 2020

- Developed and integrated a Python algorithm that computes a personalized study block schedule using user data (calendar events, tasks) with Flask, SQL, and Google Calendar API.

Electric Truck Math Modeling Paper · MathWorks Math Modeling Challenge, Mar 2020

- Developed math model to compute the number and distribution of electric truck chargers needed along five US freight corridors given current levels of long haul traffic.
- Conducted model sensitivity analysis and collaborated on technical writeup in 14 hours with four other teammates.
- Awarded scholarship distinction among 37 top papers out of 760 submissions (top 4.8% of submissions nationally) by The Society for Industrial & Applied Mathematics.

Honors

- *CMU School of Computer Science Dean's List*, *High Honors*, Spring 2021, Fall 2020
- *MIT Summer Geometry Institute Tutorial Week*, 2021
- *Google Computer Science Summer Institute*, 2020