Yixin "Ella" Guo

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EDUCATION

Tufts University **May 2025**
Bachelor of Science in Applied Physics and Computer Science with Minor in Studio Art *Medford, MA*
GPA: 3.91/4.00, Dean's List
Academic Awards: Howard Sample Prize Scholarship in Physics

Relevant Courses: Quantum Theory, Algorithms, Data Structures, Machine Structure and Assembly-Language Programming, Linear Algebra, Bridge to Higher Mathematics (Discrete Mathematics), Computational Physics, Intermediate Mechanics

Spring 2024: Programming Languages, Computation Theory, Network Security, Advanced Experimental Physics

EXPERIENCE

Tufts University, Department of Computer Science ***Medford, MA***
Teaching Assistant for Data Structures and Intro CS *Jan 2023 – Present*

- Lead weekly lab to explain concepts and implementations of data structures from lectures
- Host two weekly office hours to help students debug errors and develop design plans for projects
- Develop and utilize automatic grading software in Python to assess functional correctness for 300 students

Tufts University, Department of Physics and Astronomy ***Medford, MA***
Learning Assistant for Intro Physics *Jan 2023 – May 2023*

- Led discussion sessions in a 90 students class, encourage active participation and critical thinking
- Held after-class recitations and office hours, review the lectures, and answer students' questions
- Developed pedagogy, communication, and time-management skills

PROJECTS

Personal Website | HTML, CSS, JavaScript

- Designed and developed a responsive multi-page website that functions across multiple devices, including laptops, phones, and tablets
- Implemented interactive features such as draggable image slider, navigation menu, and hover effects

P2P Instant Messenger | Python

- Implemented an instant messenger/online chat that uses TCP to send messages between hosts
- Encrypted the messages using AES-256 in CBC mode and used HMAC with SHA256 for message authentication

N-Body Particle Simulation | Python

- Simulated the movement of an arbitrary number of particles (the N bodies) through space and time in 2 dimensions
- Plotted the positions of the particles and made a video to help with visualization

Linux grep command | C++

- Designed and implemented a program that can search through all the files in a directory and look for a sequence of character, which behaves similarly to the unix grep program
- Dealt with large data set that has 200MB of size, 2000+ of files, and 3000+ directories, and indexing that under 30 seconds and 3GB uasge of RAM

SKILLS

Programming Languages: C++, C, Python, JavaScript
Developer Tools: HTML, CSS, React, MongoDB, VS Code, LaTex, git, GitHub
Languages: Mandarin, English