

YIXIN “ELLA” GUO

Medford, MA

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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: Programming Languages, Quantum Theory, Network Security, Algorithms, Data Structures, Machine Structure and Assembly-Language Programming, Linear Algebra, Bridge to Higher Mathematics (Discrete Mathematics), Computational Physics, Intermediate Mechanics, Computation Theory, 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 (AVL Trees, Huffman Coding, Hash Table, Dijkstra's algorithm, etc) from lectures
- Added the “swap” command to the infrastructure database in Python to improve grading for 300 students
- Host two weekly office hours to help students debug errors and develop implementation plans for projects

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, problem-solving, and time-management skills

PROJECTS

Theatre@First [🔗](#) | React, Typescript, Next.js, MongoDB, Tailwind CSS

September 2023 - present

- Collaborating with a team of 12 other members to develop an inventory website for an all-volunteer community theatre based in Somerville, MA
- Developing functionalities such as resizable image view component, item input form, grid view component, and authentication login page

Music Streaming App [🔗](#) | Swift, Xcode, Firebase, Firestore

March 2024 - present

- Designing and implementing a music streaming app program that is album based and the user interface supports player controls, including pausing, skipping, and going back
- Integrating Firebase and Firestore into the streaming music app backend to manage user authentication, database storage, and real-time updates

Personal Website [🔗](#) | HTML, CSS, JavaScript

December 2023

- 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 Encrypted Instant Messenger [🔗](#) | Python socket, PyCryptodome

March 2024

- Implemented an instant messenger/online chat that uses the Transmission Control Protocol (TCP) to send messages between different hosts across the networks
- Encrypted the messages using AES-256 in Cipher Block Chaining (CBC) mode and used HMAC with the SHA256 algorithm for message authentication

SKILLS

Programming Languages: C/C++, Python, Swift, JavaScript, Typescript, Standard ML, Scheme

Developer Tools: Xcode, Next.js, Tailwind CSS, HTML, CSS, React, MongoDB, VS Code, LaTeX, Git, GitHub, Firebase, Firestore, PyCryptodome

Languages: Mandarin, English