Ellen Zhang

Cambridge, MA · ellen660@mit.edu · https://www.linkedin.com/in/ellenzhang660/

Objective

MIT senior, rising Master's student (2026) in AI and Mathematics, seeking an UTA for Spring 2024 in the field of programming, algorithms and AI, interested in helping with office hours and grading.

Qualifications

- **Teaching Skills**: experience with planning and leading recitations, mentoring students one on one, and grading coursework; was Calculus TA for MIT Interphase for 2 summers, and LA'd for 6.1010 (Fundamentals of Programming)
- **Personal Attributes**: Responsible, quick-learner, collaborative, and excellent problem-solving skills.
- **Programming Skills**: proficient in Python, TypeScript, JavaScript, Java, Lisp, SQL
- **Mathematical & Analytical Skills**: Strong foundation in linear algebra, statistics, probability, and discrete math

Education

Massachusetts Institute of Technology **Class of 2025 (BS), Class of 2026 (MS)**

- **GPA** 4.9/5.0
- **Bachelor of Science** in Mathematics and Artificial Intelligence
- **Courses**: Computer Vision, Robotics, Machine Learning, Theory of Computation, Representation, Inference, and Reasoning in AI, Design and Analysis of Algorithms, Software Construction, Statistics, Probability, Random Variables, Linear Algebra & Optimization , Differential Equations, Discrete Mathematics, NLP (2024 fall), Signal Processing(2025 Spring)
- **LA for Fundamentals of Programming**: Helped students debug their code, teaching good coding practices.

Teaching, Work & Research Experience

MIT CS & AI Lab - Research Assistant with Dr. Dina Katabi **Fall 2024-2025**

- Conducting research to diagnose orthostatic hypotension using AI transformer models trained on sleep and EEG signals.
- Engaging in data processing, data visualization, and statistical analysis using numpy, pandas and matplotlib to analyze breathing spectrograms and sleep.
- Training and evaluating transformer based models using PyTorch on large scale datasets.

Johns Hopkins Center for Language and Speech Processing – AI Research Intern **Summer 2024**

- Collaborated with a multidisciplinary team of postdocs, PHDs and professors to develop a multi-modal audio generator.
- Planned and implemented scripts for evaluating semantic and acoustic representations in audio tokenization autoencoders, using PyTorch and advanced ML methodologies.
- Conducted research on neural audio codecs, focusing on Vector Quantized Variational Autoencoder, Self-Supervised Learning, and Spectrogram manipulation.

MIT Interphase EDGE – Calculus Teaching Assistant **Summer 2022 / 2023**

- Led recitations and provided academic support to students, improving their comprehension of calculus concepts.
- Learned to plan and present technical concepts, and received positive feedback from students.
- Helped with grading and exam reviews, and helps weekly office hours.

MIT CSAIL – Python Template Builder – Document Processing Research Lab **Spring 2023**

- Automated the extraction of key-value pairs from manufacturing PDFs using Python, streamlining document processing.
- Developed rule-based operations for parsing documents with similar formats, enhancing automation and accuracy.

Projects

- **Poker-Bots Project**: Collaboratively engineered a strategic poker bot using Python. Implemented k-means clustering on over 100,000 poker hands and applied Monte Carlo simulations and game theory concepts to enhance decision-making algorithms. Gained experience with research.
- **Web-Lab Project**: Designed and developed a journaling website hosted on Heroku, implementing full-stack development skills using JavaScript, React, MongoDB, and CSS/HTML.

Activites & Interests

Delta Phi Epsilon formal committee Hobbies: Video Games, Sustainability, Dancing, Swimming, Singing