Ethan Shen

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Education

University of Washington — Seattle, WA

B.S. in Computer Science, Minor in Mathematics and History — Aug. 2022 - Present

- **GPA**: 3.98 / 4.00
- **Activities**: Student Interviewer for UW CSE Faculty Hiring, CSE Teaching Assistant, CSE Student Advisory Council, Lavin Entrepreneurship Program
- **Coursework**: Computational Biology Research (Grad), Deep Learning, Natural Language Processing, Software Design, Data Structures and Parallelism, Databases, Hardware/Software Interface, Discrete Math, Probability and Statistics, Differential Equations, Linear Algebra, Multivariable Calculus

Skills

Languages	Java, Python, SQL, JavaScript, C, C++, HTML/CSS
Frameworks	PyTorch, HuggingFace, React, Node.js, NextJS, Flask, JUnit, scikit-learn
Dev Tools	Git, Google Cloud Platform, AWS, Azure, MongoDB, Docker, Linux

Experience

Stealth AI Company — San Francisco, CA

AI Engineer Intern — Dec. 2023 - Present

- Developed a speech recognition and transcription service using OpenAI Whisper, Pyannote, and BERT and integrated it with AWS S3, ECR, and SQS for scalable compute and storage.
- Built a first-of-a-kind feature to label speaker names in transcripts using long-context knowledge from LLMs, which is one of the company's key points of difference.
- Created evaluation pipeline for transcription/translation using NextJS and Python and deployed it with AWS Lambda and Batch, saving 20 hours of testing monthly.

RAIVN Lab @ UW — Seattle, WA

AI Research Assistant (Prof. Ali Farhadi, Prof. Ranjay Krishna) — Jun. 2023 - Present

- Researching the use of mixed vocabulary embeddings in Large Language Models (e.g. Llama-2) for efficient text generation at a fraction of the compute needed by other models.
- Led a project to investigate the benefits of hierarchical image embeddings in deep learning models (e.g. CLIP, ResNet-50) with hyperbolic and adaptive representations, publishing and presenting at the NeurIPS conference in 2023.

Sensor Systems Lab @ UW — Seattle, WA

Robotics Research Assistant (Prof. Joshua Smith) — Jun. 2022 - Jun. 2023

- Built an acoustic levitator, a tool that uses ultrasonic sound to hold fragile objects in air, with numerous applications in biotech.
- Programmed mathematical algorithms in Python and C++ to simulate, predict, and control the rotation of objects in the levitator, with a 15x speedup compared to existing simulations.

Mutorials — Bellevue, WA

Software Developer — Mar. 2020 - May 2022

- Helped found Mutorials, an ongoing web app for accessible science practice with 3,400+ problems and 30,000+ user interactions.
- Implemented backend features such as problem practice, client authentication, and user profiles with NodeJS and MongoDB.
- Designed and created frontend pages using HTML, EJS, Bootstrap, and Figma.

Projects

Generative Visual Question Answering

- Created GenVQA, a novel visual question answering (VQA) dataset using future-shifted images generated with MS-COCO captions and Stable Diffusion.
- Tested transformer and LSTM based VQA models and analyzed which architectures contribute to robustness to distribution shift.
- Wrote and presented an IEEE CVPR-style paper in a school research symposium.

Predicting Hospital Fees

- Worked with MD Shaan Kamal to develpo machine learning XGBoost models in Python to predict hospital costs for pneumonia and sepsis treatment in New York using public databases, publishing an article about my findings.
- Programmed a React frontend and Flask backend for live model interaction.

Publications

Shen, E., Farhadi, A., Kusupati, A. *Are "Hierarchical" Visual Representations Hierarchical?* Workshop on Symmetry and Geometry in Neural Representations @ NeurIPS 2023.