Jocelyn Zhao

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Education

Massachusetts Institute of Technology Expected May 2027

*Candidate for Bachelor of Science in **Artificial Intelligence and Decision Making** (GPA: 4.9 / 5.0)* *Cambridge, MA*

- **Relevant Coursework:** Software Construction, Design and Analysis of Algorithms, Deep Learning, Machine Learning, Natural Language Processing, Robotic Manipulation, Computational Structures, Linear Algebra

Work Experience

ReHome Marketplace Jun 2025 – Aug 2025

Software Engineer Intern *Cambridge, MA*

- Automated data migration, reducing manual column mapping by over 60% using Hugging Face transformers to integrate legacy data into modern workflows
- Developed full-stack Django features with Agile practices, writing extensive unit and integration tests to ensure secure role-based access control
- Collaborated with senior engineer on building lightweight Alpine + uv Docker image and setting up AWS Lightsail instance

MIT Laboratory for Information and Decision Systems (LIDS) Feb 2024 – Aug 2024

Undergraduate Researcher *Cambridge, MA*

- Modeled first-life lithium-ion battery degradation with PyBaMM, providing insights for battery lifecycle
- Applied unsupervised clustering on 100+ second-life battery datasets using scikit-learn, uncovering patterns in usage and performance from various starting conditions

Youngstown State University Jun 2022 – Aug 2022

Data Science Intern *Youngstown, OH*

- Developed and trained deep neural networks in PyTorch for clothing image classification
- Optimized model performance through hyperparameter tuning and result analysis, achieving over 90% accuracy

Technical Projects

MIT Solar Electric Vehicle Strategy System | *Scipy, Numpy, Pandas, API*

- Formulated greedy active battery balancing algorithm in C that reduced cell voltage spread by 22% in simulation, compared to passive balancing
- Developed a client-server Python architecture to pull weather data; reduced API calls by 95% using location-aware API querying without degrading prediction performance, as measured by raw data calls vs optimized data calls

SegFormer Reimplementation for Image Segmentation | *Tensorflow, Keras, Numpy*

- Built a lightweight image segmentation model based on SegFormer paper, components include attention blocks and convolutional layers; consists of 3.7M trainable parameters
- Achieved around 70% mean Intersection over Union (mIoU) on KITTI road detection dataset; built image preprocessing pipeline with data augmentation; trained on limited compute resources

2048 Reinforcement Learning | *PyTorch, OpenAI Gym, Numpy, Pandas*

- Accomplished consistent 512+ tile attainment early in training, as measured by agent performance versus random baseline, by building a convolutional Deep Q-Network and discouraging detrimental moves

BattleLingo | *MongoDB, Express.js, React.js, Node.js*

- Secured 4th place out of 60 submissions in a competitive web app showcase with a real-time multiplayer typing game designed to support language learning, built as a team of 3
- Designed and launched a live PVP/bot typing game leveraging Socket.io to handle real-time communication and concurrency, supporting nearly 100 users with responsive gameplay

Skills

Languages: Python, TypeScript/JavaScript, C, HTML, Tailwind CSS
Technologies: PyTorch, Tensorflow/Keras, Django, Docker
Version Control: git, GitHub, GitLab