Frank Liu

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EDUCATION

Massachusetts Institute of Technology   Cambridge, MA
Bachelor of Science in Computer Science and Engineering, GPA: 3.5   *Aug. 2022 – May 2026*

Julia Reynolds Masterman Laboratory and Demonstration School   Philadelphia, PA
High School Diploma, GPA: 3.95   *Sep. 2018 – May 2022*

EXPERIENCE

Undergraduate Machine Learning Researcher   Feb. 2024 – Present
MIT Sea Grant Department   *Cambridge, MA*
- Refined deep learning models by tuning hyperparameters and utilizing high-performance computing (HPC) clusters via Linux bash scripts, resulting in enhanced accuracy and efficiency
- Conducted data labeling, augmentation, and model training on over 10,000 sample images, leading to a validation accuracy of more than 90 percent across 6 fish species
- Utilized Python and PyTorch extensively for transfer learning and further fine tuning

Teaching Assistant   Sep. 2023 – May 2024
MIT Physics Department   *Cambridge, MA*
- Assisted over 40 students in mastering electricity and magnetism through both one-on-one tutoring and group sessions by conveying concepts intuitively

Control Arms Sizing Lead   Sep. 2022 – Dec. 2023
MIT Motorsports Racecar Team   *Cambridge, MA*
- Communicated and worked with other subteam leads to ensure safety compliance and team cohesiveness, resulting in meeting design and architecture deadlines 1 week early
- Performed stress-based optimizations on control arms through a mathematical analysis of applied loads

Program Intern   June 2023 – Aug. 2023
MIT Sandbox Innovation Fund Program   *Cambridge, MA*
- Collaborated with 3 other student entrepreneurs to conceptualize a decentralized clinical trial business-to-business product and conducted comprehensive client-based discovery through 12 expert interviews

PROJECTS

Convolutional Neural Network | *Python, Pytorch, OpenCV, Matplotlib, NumPy*   July 2024 – Present
- Constructed the ResNet neural network architecture, including training, validation functions, and a data-augmentation pipeline, achieving an end-to-end workflow for image classification and transfer learning

Scheme Programming Language Compiler | *Python*   Apr. 2024
- Developed a Scheme-to-Python syntax compiler, supporting functions, conditionals, variables, and basic operators, allowing Scheme syntax to be compiled within Python

Minesweeper | *Python*   Mar. 2024
- Designed and implemented Minesweeper in both 2D and N-dimensional formats, featuring board creation, visualization, and digging

Maize for web.lab Hackathon | *JavaScript, React.js, MongoDB*   Jan. 2023
- Spearheaded frontend development for a website by using React components and modules to design page layout, interactive buttons, and page transitions

TECHNICAL SKILLS

Languages: Python, C, Assembly, HTML/CSS, MATLAB, Javascript
Framework and Libraries: Pytorch, NumPy, OpenCV, React.js, pandas, matplotlib
Developer Tools: Git, VS Code, Visual Studio, Jupyter Notebook, HPC Clusters, Bash, Unix Terminal
Methodologies: Algorithms, Machine Learning, Deep Learning, Data Augmentation, Hyperparameter Tuning, Computer Vision, Object-Oriented Programming (OOP), Agile Development
Interpersonal Skills: Team Collaboration, Leadership, Project Management, Technical Communication