Jack Jin

(347) 798-7976 | Elmhurst, New York | jackj00125@gmail.com | LinkedIn Page

EDUCATION

Massachusetts Institute of Technology **Cambridge, MA**

Bachelor of Science in Computer Science and Engineering *Graduation Date: May. 2024*

- GPA: 4.5/5.0
- Coursework: Intro to Machine Learning, Design and Analysis Algorithms, Software Construction, System Design, Computer Graphics, Computer Vision, Introduction to Algorithms, Computer Security, Intro to Probability and Stats

SKILLS

Python | Java | Typescript | C++ | R | Machine Learning & AI | Communication | Leadership | Willing to learn | Adaptable | Data Modeling and Analyzing | SQL | Assembly

PROJECTS

Python-based Voxel Engine

Developed from scratch; improved computational efficiency by optimizing landscape rendering and user interaction.

- Engineered a Python-based engine using PyGame and ModernGL, achieving real-time world generation.
- Utilized GLM simplex noise algorithm and MIPmaps to generate realistic world landscapes and improve visuals.
- Optimized resource usage by around 500% through implementing face-culling of hidden voxel faces not exposed to a given voxel type such as air.
- Designed intuitive GUI allowing user customization of world features, significantly improving user engagement.

TSAI-based Space Weather Forecaster

Led model development; significantly increased predictive accuracy using innovative data sampling and model tuning strategies.

- Spearheaded the creation of a robust forecasting model using tsai, improving model reliability for space weather prediction.
- Applied diverse data sampling techniques, achieving optimal model performance with tailored train-test-validation splits.

Image Manipulator and Classifier

Built a dual-function tool for image editing and classification; employed advanced neural networks to enhance functionality.

- Developed functionalities for pixel manipulation and filter application, including a custom seam carving tool for dynamic image resizing.
- Created a convolutional neural network-based classifier and improved accuracy in image categorization through additional neural layers.

Various Renders in C++

- Rendered objects within given scenes using OpenGL and GLOO. Employed MIPmaps for texture generation to efficiently manage texture memory and enhance rendering performance.
- Implemented advanced algorithms such as ray tracing and ray casting to accurately simulate light propagation, material interactions, and environmental effects, resulting in highly realistic visualizations.

EXPERIENCE

Massachusetts Institute of Technology UROP **Cambridge, MA**

Student Researcher *June 2023 - Jan. 2024*

- Collaborated with an MIT researcher to enhance space weather forecasting using AI-driven tools, focusing on developing more accurate predictive models.
- Investigated existing models and methodologies to deepen understanding of machine learning applications.
- Analyzed historical data and developed machine learning models to accurately predict solar flare occurrences, achieving an impressive 90% accuracy rate in forecasting various space weather parameters.
- Executed rigorous testing procedures on machine learning models to verify their reliability, with a success rate of 95% in accurately predicting geomagnetic storm events.