Elliot H Ha

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Education

Duke University, Pratt School of Engineering   **Expected May 2024**

B.S. Computer Science, B.S.E. Electrical & Computer Engineering   Durham, NC

Relevant Courses: Adv. Topics in Deep Learning, System Design for ML & Signal Processing, Algorithm Design & Analysis

Experience

Software Engineering Intern   May 2023 – August 2023

Morgenrot Corp.   San Francisco, CA

- Developed and implemented a full-stack, generative AI web application that leveraged Apache reverse proxies to make RESTful API calls to dockerized stable diffusion software for custom image generation
- Reduced wait time bottlenecks in image generation by over 90% by parallelizing application infrastructure across multiple EC2 virtual machine instances via Google Cloud Load Balancer
- Designed and integrated a scalable Flask and SQLAlchemy backend complete with unit testing to process external API calls and handle secure user authentication for 1000+ users

Undergraduate Teaching Assistant   January 2023 – May 2023

Duke University   Durham, NC

- Achieved a 7% average increase in assignment grades across 80+ students in an undergraduate server-side web applications course by providing tutoring via office hours for 10 hours weekly across 16 weeks

Projects

Reinforcement Learning Pacman Agent   github.com/elliothha/PacmanAI

- Developed a convolutional Dueling Deep Q-Network for an agent playing OpenAI Gym's "Ms. Pacman", raising average game score from 270 with random exploration to 1280 when relying only on Q-value exploitation
- Implemented a primary/target network update approach, coupled with experience replay for continual learning, in order to stabilize training in converging to an optimal policy

Time Series Forecasting for Retail Sales   github.com/elliothha/StoreSaleForecasting

- Designed separate Long Short-Term Memory and "Attention Is All You Need" Transformer models to analyze large Kaggle datasets on retail store sales, achieving a loss score of 3.022 when predicting future sales numbers
- Constructed and optimized data preprocessing pipelines to efficiently create tailored time-series datasets for specific categorical variable pairings, enhancing the robustness and computation efficiency of both models

Spotify Playlist Color Sorter   github.com/elliothha/SpotifyColorSorter

- Integrated Spotify's Web API and comprehensive unit testing into a modular Flask app designed to securely sort user playlists on the basis of song album cover colors
- Extracted dominant colors from album covers via clustering algorithms, allowing for the design and implementation of a custom sorting heuristic based on the cosine similarity between LAB space feature vectors

Skills

Stack: Python, PyTorch, Jupyter, Anaconda, Google Cloud/AWS EC2, Docker, Git

Libraries & Frameworks: NumPy, scikit-learn, Matplotlib, pandas, OpenAI Gym, Flask