

OLIVER YUN

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EDUCATION

Carnegie Mellon University

B.S. in Computer Science

Aug. 2023 – May 2027

QPA: 4.00/4.00 (Dean's List)

Selected Coursework: Computer Systems, Parallel & Sequential Data Structures & Algorithms, Theoretical Computer Science, Machine Learning, Deep Learning, Real Analysis.

EXPERIENCE

Software Development Engineer Intern | Amazon

May 2025 – Aug. 2025

- Architected an end-to-end system integrating large language models for context-aware advertisement campaign ideation and creation, reducing average campaign setup time by 60%.
- Engineered a data pipeline that retrieves real-time context (seasonal trends, holidays, product inventory) from internal APIs to inform the language model.
- Engineered a conversational React UI that integrated with Amazon's advertising APIs, enabling users to preview and deploy generated campaigns.

Machine Learning Engineer Intern | Glodon

May 2024 – Jul. 2024

- Developed a novel representation of CAD sequences for input to a CAD generation transformer, resulting in 97% and 92% accuracy for sketch operation and curve type categorization, and 0.04 MSE for coordinate regression.
- Developed a transformer decoder-based network that, given a 2-dimensional sketch as input, generates sketch operations to construct the image as a CAD sequence.
- Created a comprehensive visualization tool using Matplotlib and Gradio to analyze a codebook of architectural models, enhancing the interpretability of complex data representations.

Competitions Director | Carnegie Mellon Data Science Club

Dec. 2023 – Present

- Implemented an automated stratified sampling matchmaking system for the AI Poker Competition using AWS DynamoDB and Lambda enforcing daily match limits while maintaining match history in PostgreSQL.
- Developed a match result handling system, integrating AWS SQS for real-time result processing and AWS S3 for match logging, enabling match streaming to front-end for interpretability of bot actions and match outcomes.

PROJECTS

Feature Visualization for Mechanistic Interpretability | [Blog](#), [Github](#)

- Investigated feature representation in AlexNet, corroborating the superposition hypothesis by identifying and documenting polysemantic neurons that activate for multiple, distinct concepts in a spatially-dependent manner.
- Developed a feature visualization pipeline in PyTorch with regularization (transformation robustness, color decorrelation) to synthesize inputs that isolate and reveal complex, superimposed features.

Retrieval-Augmented Generation for Documentation Search | [GitHub](#)

- Built a full-stack retrieval-augmented generation (RAG) chat application, processing library documentation files through automated chunking, Google Gemini embeddings, and ChromaDB vector storage for semantic search.
- Implemented scalable document processing pipeline with batch operations, backup/restoration capabilities, and real-time chat interface, delivering contextual AI responses with source citations and related question suggestions.

Contrastive Language-Image Pre-Training | [Github](#)

- Implemented CLIP model from scratch, including Vision Transformer (ViT) and Text Transformer encoders with multi-head self-attention, positional encoding, and contrastive learning objectives for multimodal alignment.
- Developed a PyTorch dataset implementation with data streaming, shuffle buffer management, image augmentations, and automated quality control, supporting efficient training on the 2 billion sample LAION dataset.

SKILLS

- **Programming Languages & Tools:** Python, C, Java, TypeScript, React, Next.js, FastAPI, Standard ML, Git, Unix.
- **Data Science & Machine Learning:** NumPy, Pandas, Matplotlib, PyTorch, CNNs, LSTMs, Transformers, RAG, Computer Vision, PostgreSQL, ChromaDB.