Ju Young (Justin) Yang

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EDUCATION

Duke University — B.S Computer Science *graduated December 2023*

Relevant Coursework: Database Systems, Design/Analysis of Algorithms, Intro to AI, Data Structures and Algorithms, Computer Systems, Server Side Web Applications, iOS Mobile App Development, Discrete Math

Skills:

Languages	Python, SQL, Java, C, Javascript, Typescript, Ruby, Swift
Frameworks & Libraries	Pytorch, Tensorflow, scikit-learn, OpenAI, Flask, React, Next.js, Node.js, Express
ML & AI	Transformer, Neural Networks, Classification, PCA, Markov Models, Reinforcement Learning
Database	MongoDB, PostgreSQL, XML, SQLAlchemy
Tools & Platforms	Git, AWS, Docker, OAuth2.0, Shell (Bash/Unix)

EXPERIENCE

ML Engineering Intern, POZAlabs *May 2022 - August 2022*
Seoul, Republic of Korea

- Conducted ablation study to investigate the effect of *'Track-Role'* metadata in combinatorial music generation; evaluated its distinctiveness compared to human composed samples through Amazon Mturk involving 100 composers.
- Provided research and editorial support for paper published in NeurIPS 2022 (ComMU: A Dataset for Combinatorial Music Generation). Created demo-page as supplementary material.

Defense Communication Systems Specialist, Korea Army Headquarters *June 2020 - December 2021*
Seoul, Republic of Korea

- Implemented and managed both wire and IP/TCP systems to ensure seamless inter-departmental communication between Army, Navy, and Air Force branches at the headquarters.
- Oversaw national communication networks to meet the operational needs of military units.

RESEARCH & PUBLICATION

Recurrent Transformer Research at ColAI *Current*
Transformers, RNN

- Engaged in research at ColAI on advanced methodologies to enhance the efficiency and extend the context length of Transformer models. Focused on integrating diverse architectural frameworks, including LoRA, Mamba, and Retentive Network.

MID-FiLD: MIDI Dataset for Fine-Level Dynamics (AAAI 2024) *August 2023*
Symbolic Music Generation, SVM

- Performed research on music generation task implementing fine-level dynamics with ML researchers at POZAlabs (invited).
- Trained vanilla Transformer-XL model on dataset and conducted exploratory data analysis. Observed success rate of 80% on valence mood classification task using Support Vector Machine. Accepted to AAAI 2024.

PROJECTS

Earth Street Journal *October 2023*
Flask, MongoDB, Fine-tuning LLM

- Developed custom backend API using flask and leveraged MongoDB for article scraping and curation, and user management.
- Fine-tuned GPT model with tailored training and validation dataset to enhance data consistency and summarization quality.

Bulk Buy Buddies *October 2023*
Next.js, Flask, MongoDB, Google Maps API

- Crafted web-application to simplify bulk purchase decisions by matching Costco customers who wish to split purchased items.
- Incorporated custom backend API with Next.js frontend and implemented Google Maps API for location-specific services.
- Utilized MongoDB to efficiently handle user, store location, product data, and product inventories.

Not Uber *November 2023*
Python, Graph Theory, Algorithms

- Designed and implemented event-driven decision algorithms (A*, Dijkstra's Floyd-Warshall) to optimize driver-passenger matching in a graph-based model of Manhattan with over 50,000 nodes to minimize wait/travel time and maximize driver profit.
- Spearheaded runtime analysis and desire-data assessment, resulting in an efficient linear-time matching strategy.