Jaden Yifan He

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Education

Carnegie Mellon University – ***School of Computer Science*** *Aug 2021 – May 2023*
Master of Science in Music and Technology – Computer Science track | QPA: 4.0/4.0 | Fellowship *Pittsburgh, PA*
Relevant Coursework: Deep Learning, Machine Learning, Digital Signal Processing, Multimedia Systems, Clouding Computing

University of North Carolina at Chapel Hill – ***School of Information*** *Class of 2021*
Bachelor of Science in Information Science | Minor in Music | GPA: 3.9/4.0 | Highest honor and distinction *Chapel Hill, NC*
Relevant Coursework: Information Retrieval, Database Systems, Object-oriented and Web programming, Distributed Systems

Stanford University *June 2020 – Aug 2020*
Summer School at Center for Computer Research in Music and Acoustics *Stanford, CA*
Relevant Coursework: Music Information Retrieval, Neural Nets for Music, Algorithmic Composition

Experience

Carnegie Mellon University *Sep 2021 – Feb 2022*
Audio Engineer *Pittsburgh, PA*
- Recorded and webcast student and faculty recitals, ensemble concerts, and university events on YouTube.
- Set up and managed audio equipments, and edited/mastered the recorded projects using Pro Tools.

Singapore University of Technology and Design *June 2021 – Aug 2021*
Research Assistant *Remote Work*
- Summarized over 30 papers of chord and rhythm generation task for video in AMAAI Lab.
- Developed a GCN and Transformer decoder to map human body movement with MIDI events.

Tencent *May 2019 – Nov 2020*
Machine Learning Engineer *Remote Work*
- Developed a metadata tagging pipeline for dataset gathering and improved team's audio fingerprint algorithm by 7%.
- Managed distributed backend database using SQL, and made over 3000 files available on platform.
- Designed and built team website using Django for visualized data storage/extraction, and research results.
- Lead and evaluated user reviews for team's products on social media and reported weekly to the team manager.

Projects

Audiovisual-based Multimedia Event Detection System [Github] *Jan 2022 – Feb 2022*
- Developed a large-scale multimedia processing pipeline on SVM and MLP that extract MFCC and SIFT features from videos using K-means Bag-of-Words representation, which also implemented with neuron features including SoundNet, PANNs, PaSST for audio, and VGG, ResNet for video.
- Generating more accurate videos embedding by implementing features fusion schemes including early fusion, late fusion, and double fusion.
- Implemented End-to-end Zero-shot classification pipeline using Word2vec for unseen classes.

Mytorch Deep Leaning Library [Github] *Jan 2022 – Feb 2022*
- Developed a PyTorch-like Deep Learning Library from scratch that supports MLP, CNN, RNN using only Numpy.
- Implemented functions including activation, loss, backpropagation, SGD with momentum, Adam, batch norm, dropout.
- Built and trained neural networks on AWS and GCP to perform tasks including phoneme state classification, face verification, and speech to text transcription on large datasets.

Machine Learning-based Automated DJ System [Github] *Sep 2021 – Dec 2021*
- Developed an automated EDM mixing system that implemented beat/downbeat tracking, segmentation, key extraction, voice detection, track selection, cue point selection, and cross-fading using existing ML methods in literature.

Collaborative Filtering Recommendation System for Music [Thesis] *Apr 2020 – May 2021*
- Gathered a new dataset from the streaming platform for music recommendation task.
- Conducted experiments of comparing Memory-based (k-nearest neighbors) and Model-based (Slope One, SVD, SVD++) collaborative filtering algorithms on the dataset.

Technical Skills

Languages: Python, C++, Java, Go, C, HTML/CSS, JavaScript, MATLAB, SQL
Tools: Unix/Linux, Git, Docker, Amazon Web Services, Google Cloud Platform, Apache Spark, MySQL
Frameworks: PyTorch, TensorFlow, scikit-learn, SciPy, pandas, FFmpeg, Librosa, OpenSMILE, OpenCV, MapReduce, Selenium, Django, Bootstrap, React
Audio: Max/MSP, ChucK, Pro Tools, Logic Pro, Sibelius, Adobe Audition, Audacity, MuseScore