HSIAO-TZU HUNG

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EDUCATION

National Taiwan University *March 2020 - Feb. 2022*
M.S @ Computer Science (Focus: Deep Learning)
- Advisor: Prof. Yi-Hsuan Yang & Prof. Jyh-Shing Roger Jang
- Master's Thesis: Emotion-Conditioned Piano Music Generation Using Compound Word Transformer
An emotion-conditioned piano music generation model using Transformer with customized data representation, showcased at ISMIR 2021 with 17% emotion control accuracy and 13% overall quality enhancement

National Tsing Hua University *September 2010 – June 2014*
B.S @ Physics

SKILLS

Engineering:	Python, Git, Linux Shell Script, C++, Docker, MongoDB
AI/ML:	PyTorch, TensorFlow, Scikit-learn, Audio Signal Processing
Open Source Tools:	DeepSpeed, Hugging Face
Data Visualization:	Matplotlib, seaborn
User Interface:	PyQt5

WORK EXPERIENCE

MediaTek, Taiwan *Aug 2022 - current*
Machine Learning Develop Engineer

Generative AI: Pioneered the development of an in-house Fine-Tuning Service for Large Language Models (LLM), simultaneously boosting throughput and optimizing resource usage efficiency in alignment with the organization's unique requirements. The tool has been used for code optimization, assertion generation fine-tuning tasks. Additionally, provided expert guidance and recommendations for optimizing LLM to maximize their organizational utility.

Anomaly Detection: Collaborated with the hardware design verification team to enhance the verification process by integrating machine learning techniques for Anomaly Detection. The deployed ML-based model resulted in a significant 20% reduction in simulation time.

· **Classification:** Worked in collaboration with the static timing analysis team to streamline their workflow using Graph Neural Network for Classification. The implemented model is anticipated to decrease violations by 20%.

INTERNSHIP

Amazon Ring, Taiwan *June 2021 - Aug. 2021*
Acoustic Engineering Intern

Quality Assessment: Accelerated acoustic component development by creating an application comprising a user interface, a CNN-Self-Attention Model for automatic audio quality assessment, and a root-cause classification model. This innovation reduced the verification process time from 1 day to just 10 minutes.

Research Center for IT Innovation, Academia Sinica, Taiwan   March 2020 - Feb. 2022
Part-time Machine Learning Research Assistant

· **<u>Generative AI:</u>** Led a team in collaboration with a team from KAIST, Korea, to curate a multimodal piano music dataset with emotion labels, resulting in 51 citations and 1k downloads by October 2023.

Taiwan AI Labs, Taiwan   Feb. 2019 – Feb. 2020
Full-time Machine Learning Research Internship

Developed and implemented advanced AI techniques, including investigating multi-tasking and fine-tuning methods to enhance Jazz piano music generation with small datasets, achieving an impressive 11% improvement in subjective test scores. Additionally, utilized the VQ-VAE model to extract rich information for Music Emotion Recognition.

COURSES

Foundation:	Algorithm Design and Analysis, Operating System, Computer Architecture
AI/ML:	Machine Learning : A+, top 9.8%
	DL for Computer Vision: A+
	Advanced Topics in Multimedia Analysis and Indexing

PUBLICATIONS

Hsiao-Tzu Hung, Joann Ching, Seungheon Doh, Nabin Kim, Juhan Nam and Yi-Hsuan Yang, EMOPIA: A Multi-Modal Pop Piano Dataset For Emotion Recognition and Emotion-based Music Generation, in *Proc. International Society for Music Information Retrieval* (ISMIR), 2021.

Hsiao-Tzu Hung, Chung-Yang Wang, Yi-Hsuan Yang, Hsin-Min Wang, "Improving automatic Jazz melody generation by transfer learning techniques," in *Proc. Asia Pacific Signal and Information Processing Association Annual Summit and Conference* (APSIPA ASC), 2019.

Hsiao-Tzu Hung, Yu-Hua Chen, Maximilian Mayer,Michael Vtter, Eva Zangerle, Yi-Hsuan Yang "MediaEval 2019 Emotion and Theme Recognition task: A VQ-VAE based approach", in *Proc. MediaEval Benchmarking Initiative for Multimedia Evaluation* (MediaEval), 2019.

SOFT SKILL

<u>Ownership.</u> I consider myself to be a good team player and have been part of diverse projects with a variety of people. (See Publications [1,3])

<u>Good communication skills.</u> Developed through my teaching career. Students think I am a good lecturer that delivers concepts that are easy to understand.

<u>Bias for Action and Adaptability.</u> Especially strengthened when I switched my career to computer science.