

# HSIAO-TZU HUNG 洪筱慈

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## WORK EXPERIENCE

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### MediaTek

Aug. 2022 - May 2024

#### Deep Learning Engineer (AI Software Engineer Equivalent)

Hsinchu, Taiwan

- Developed and optimized an in-house fine-tuning API for Large Language Models (LLM), successfully applied to over 3 tasks involving code and language understanding, improving performance and integration.
  - Integrated multiple LLMs and applied state-of-the-art NLP/NLU techniques, such as parameter-efficient fine-tuning and memory-efficient attention, to enhance system performance.
  - Continuously reviewed the latest NLP research, with a focus on LLM fine-tuning and related deployment techniques, to maintain an up-to-date and cutting-edge API.
- Collaborated with the in-house hardware R&D team to streamline workflows using deep learning methods, including Graph Neural Networks for classification and anomaly detection. This cross-departmental effort is projected to improve the hardware team's work efficiency by over 20%.

### Amazon Ring

June 2021 - Aug. 2021

#### Acoustic Engineering Internship

Taipei, Taiwan

- Accelerated acoustic component development by creating an application with a user interface, a deep learning-based Model for automatic audio quality assessment, and a root-cause classification model. This innovation reduced the verification process time from 1 day to 10 minutes.

### Research Center for IT Innovation, Academia Sinica

March 2020 - Feb. 2022

#### Machine Learning Research Assistant

Taipei, Taiwan

- Led a collaborative project with a team from KAIST, Korea, guiding my team to create a multi-modal piano music dataset with emotion labels. This project resulted in 97 citations and over 2,000 downloads by September 2024.

### Taiwan AI Labs

Feb. 2019 - Feb. 2020

#### Full-time Machine Learning Research Internship

Taipei, Taiwan

- Developed advanced artificial intelligence techniques, including investigating the multi-tasking and fine-tuning methods, to enhance the Jazz piano music generation with small datasets.

## SKILLS

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**AI/ML** PyTorch, TensorFlow, DeepSpeed, Hugging Face, Matplotlib, Scikit-learn, MLflow

**Engineering** Python, pytest, Git, Docker, Linux Shell Script, bsub, C++

## EDUCATION

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**National Taiwan University** | *MSc in Computer Science, AI Program, Dept. of CSIE* Feb. 2022

- Advised by Prof. Yi-Hsuan Yang & Prof. Jyh-Shing Roger Jang
- Master's Thesis: Emotion-Conditioned Piano Music Generation Using Compound Word Transformer.  
Abstract: Developed an emotion-conditioned piano music generation model leveraging NLP techniques, such as Transformer architectures and customized data representation. The model, showcased at the international conference ISMIR 2021, achieved a 17% improvement in emotion control accuracy and a 13% overall quality enhancement.

**National Tsing Hua University** | *Bachelor of Physics*

June 2014

## COURSES

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**Foundation** Algorithm Design and Analysis, Operating System, Computer Architecture

**AI/ML** Deep Learning for Computer Vision, Machine Learning, Advanced Topics in Multimedia Analysis and Indexing

## PUBLICATIONS

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- **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 Vötter, 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.