

Gene-Ping Yang

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Education

University of Edinburgh

PH.D. IN CSTR, SCHOOL OF INFORMATICS, SUPERVISOR: PROF. HAO TANG

Edinburgh, Scotland

Oct. 2020 - Present

National Taiwan University

M.S. IN COMPUTER SCIENCE, SUPERVISOR: PROF. LIN-SHAN LEE AND PROF. HUNG-YI LEE

THESIS TITLE: SPEECH SEPARATION WITH TIME-AND-FREQUENCY CROSS-DOMAIN JOINT EMBEDDING AND CLUSTERING

B.S. IN ELECTRICAL ENGINEERING

Taipei, Taiwan

Sep. 2017 - June 2019

Sep. 2013 - June 2017

Experience

The Centre for Speech Technology Research (CSTR)

PHD STUDENT, SUPERVISOR: Prof. Hao Tang

- Incorporate both **segmental and linguistic structures** into **self-supervised learning** to embed hierarchical information in speech.
- Develop an **automatic speech recognition model** incorporating **soft linguistic hierarchy** to improve the learning process and interpretability of speech representation space.
- Discover **phone and syllable segments** by leveraging self-supervised speech features through smoothness analysis. Additionally, formulate a straightforward boundary strategy that outperforms all current self-supervised models integrating segmental learning.

Edinburgh, Scotland

Oct. 2020 - Present

Apple

RESEARCH SCIENTIST INTERN, MENTOR: Zhen Huang, Stefan Braun, Loren Lugosch

- Pioneer **speech foundation model** research via self-supervised joint encoder decoder pre-training using multi-lingual speech pseudo labels. (paper under preparation)

Cambridge, MA

July. 2023 - Sep. 2023

Amazon

APPLIED SCIENTIST INTERN, MENTOR: Yuzong Liu, Yue Gu, Qingming Tang

- Conduct the **distillation of self-supervised models** by employing a novel task-agnostic objective, incorporating redundancy reduction and contrastive learning, while simultaneously mitigating data bias. (Publication 3)
- Apply a **novel quantization-aware training** technique to quantize self-supervised models, focusing on both model weights and activations to maintain optimal model performance. (Publication 1)

Sunnyvale, CA

Sep. 2022 - Dec. 2022

Speech Processing and Machine Learning Lab

MASTER STUDENT, UNDERGRAD RESEARCH STUDENT, SUPERVISOR: Prof. Lin-shan Lee and Prof. Hung-yi Lee

- Investigate modeling techniques for **speech separation** models and develop new algorithm for **permutation invariant training**.

NTU, Taiwan

Feb. 2017 - Aug. 2020

Ministry of Science and Technology

HEAD TEACHING ASSISTANT FOR FORMOSA GRAND CHALLENGE, ORGANIZER: Prof. Hung-yi Lee

- Host of Chinese **question answering challenge**: data collection from TV show, model preparation using Pytorch, Tensorflow and Keras, and prepare documentation for understanding state-of-the-art question answering models and their implementation.

Taipei, Taiwan

July 2017 - Oct. 2017

Microsoft

RESEARCH AND DESIGN INTERN

- Build robots with embedded systems on MediaTek LinkIt Smart 7688 chips and implemented automated instructions using Azure.
- Develop and implemented a **real-time face tracking** system with the integration of an **emotion recognition** machine learning model.

Taipei, Taiwan

July 2016 - Oct. 2016

Department of Computer Science and Information Engineering

TEACHING ASSISTANT

- [1] Applied Deep Learning, [2] Machine Learning and Having it Deep and Structured and [3] Machine Learning.

NTU, Taiwan

Sep. 2017 - June 2019

Publications

1. On-Device Constrained Self-Supervised Learning for Keyword Spotting via Quantization Aware Pre-Training and Fine-tuning

GENE-PING YANG, YUE GU, SASHANK MACHA, QINGMING TANG, YUZONG LIU

ICASSP 2024

2. Towards Matching Phones and Speech Representations

GENE-PING YANG, HAO TANG.

ASRU 2023

3. On-device Constrained Self-Supervised Speech Representation Learning for Keyword Spotting via Knowledge Distillation

GENE-PING YANG, YUE GU, QINGMING TANG, DONGSU DU, YUZONG LIU.

Interspeech 2023

4. Autoregressive Predictive Coding: A Comprehensive Study

GENE-PING YANG, SUNG-LIN YEH, YU-AN CHUNG, JAMES GLASS, HAO TANG.

JSTSP 2022

5. Supervised Attention In Sequence-to-Sequence Models for Speech Recognition

GENE-PING YANG, HAO TANG.

MLSLP 2021, ICASSP 2022

6. Stabilizing Label Assignment for Speech Separation by Self-Supervised Pre-Training

SUNG-FENG HUANG, SHUN-PO CHUANG, DA-RONG LIU, YI-CHEN CHEN, GENE-PING YANG, HUNG-YI LEE.

Interspeech 2021

7. Interrupted and Cascaded Permutation Invariant Training for Speech Separation

GENE-PING YANG, SZU-LIN WU, YAO-WEN MAO, HUNG-YI LEE, LIN-SHAN LEE.

ICASSP 2020 Lecture

8. Improved Speech Separation with Time-and-Frequency Cross-domain Joint Embedding and Clustering

GENE-PING YANG, CHAO-I TUAN, HUNG-YI LEE, LIN-SHAN LEE.

Interspeech 2019 Oral