

EDUCATION

National Taiwan University (NTU), Taipei, Taiwan

Sep 2017 – Jun 2021

B.S. in **Electrical Engineering**

- **GPA:** overall: **4.24/4.30**, last 60 credits: **4.27/4.30**, ranking: **6/261 (top 2%)**
- **Honors:** 4 Dean's List Awards (top 5% students of the class)
- **Related courses:** Digital Speech Processing, Deep Learning for Human Language Processing, Algorithms, Machine Learning, Natural Language Processing, Optimization Algorithms

EXPERIENCE

Undergraduate Researcher at Speech Processing Laboratory, NTU

Mar 2019 – Present

Advisor: Prof. Lin-shan Lee & Prof. Hung-yi Lee

- **Lifelong Learning of End-to-end ASR** [1]
Proposed data selection methods for lifelong learning of end-to-end ASR and achieved 29% WER reduction compared to the fine-tuning baseline when learning WSJ, LibriSpeech, and Switchboard sequentially.
- **Non-autoregressive Code-switching ASR** [2]
Proposed using Pinyin-based Mask-CTC and word embedding regularization methods to tackle the Mandarin-English code-switching ASR issue and achieved state-of-the-art performance on the SEAME corpus.
- **End-to-end Whispered Speech Recognition** [3]
Proposed frequency-weighted approaches and pseudo whisper pre-training methods, and successfully narrowed down the performance gap between whispered and normal speech recognition.

PUBLICATIONS († INDICATES EQUAL CONTRIBUTION)

- [1] **Heng-Jui Chang**, Hung-yi Lee, and Lin-shan Lee, "Towards lifelong learning of end-to-end ASR", *under review (INTERSPEECH)*, 2021, [[pdf](#)].
- [2] Shun-Po Chuang†, **Heng-Jui Chang**†, Sung-Feng Huang, and Hung-yi Lee, "Non-autoregressive Mandarin-English code-switching speech recognition with Pinyin mask-CTC and word embedding regularization", *under review (INTERSPEECH)*, 2021, [[pdf](#)].
- [3] **Heng-Jui Chang**, Alexander H. Liu, Hung-yi Lee, and Lin-shan Lee, "End-to-end whispered speech recognition with frequency-weighted approaches and pseudo whisper pre-training", *IEEE Spoken Language Technology Workshop (SLT)*, 2021, [[pdf](#)].

SELECTED PROJECTS

End-to-end Automatic Speech Recognition in PyTorch [[Github \(850+ stars\)](#)]

Aug 2020

Open Sourced Project, Github

- Implemented time-synchronous CTC beam decoding algorithm in PyTorch and helped maintaining the project.

Are We Attracted to People Who Look Like Us? [[Github](#)]

Jun 2020

Course final project of *Interactive Computer Graphics*, NTU CSIE

- A psychological experiment using 2D face image metamorphosis implemented in NumPy and OpenCV.
- Let people rank morphed faces by attractiveness where one of the faces included their faces and the results corroborated the hypothesis with high confidence.

Deep Learning-Based Image Geometric Rectification [[Demo](#)]

Jan 2020

Course final project of *Digital Image Processing*, NTU EE

- Used a CNN-based autoencoder to estimate the displacement vector field and restore distorted images by self-supervised learning with synthesized images.

TEACHING

- **TA of Machine Learning (Mandarin & English Classes)** Spring 2021
Instructor: Prof. Hung-yi Lee, NTU EE
- **TA of Linear Algebra** Fall 2020
Instructor: Prof. Hung-yi Lee, NTU EE
- **TA of Deep Learning for Human Language Processing Special Project** Summer & Fall 2020
Instructor: Prof. Hung-yi Lee, NTU EE
- **TA of Signals and Systems** Spring 2020
Instructor: Prof. Lin-shan Lee, NTU EE

SCHOLARSHIPS AND AWARDS

- **Irving T. Ho Memorial Scholarship**, NTU EECS 2020
- **Dean's List Award**, NTU EE (4 times, top 5% students of the class) 2017–2020
- **6th Place**, Taipei High School Academic Competition in Informatics (115 attendees) 2016

SKILLS

- **Programming:** C/C++, Python, MATLAB, Bash
- **Deep Learning:** Pytorch, Keras, Tensorflow
- **Speech Processing:** Kaldi, Fairseq, ESPnet, Flashlight
- **OS:** Linux, Mac OSX
- **Other:** Git, L^AT_EX

LANGUAGES

- **English:** proficient
- **Mandarin:** native
- **Japanese:** intermediate

EXTRACURRICULAR ACTIVITIES

- Rifleman at The Republic of China Army**, Taichung, Taiwan Summer 2018 & Summer 2019
- Completed obligatory military service through two-staged regular service for university and college students.
- Lecturer at NTU Balloon Design Club**, Taipei, Taiwan Jun 2018 – Jun 2019
- Designed balloon arts, taught members techniques, and held several events. [[page](#)] [[photo](#)]