

Guan-Ting Lin

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Research Interest

Deep Learning for Speech Processing, Self-Supervised Learning, Real-world Challenges for Speech Technologies

Education

National Taiwan University

Taipei, Taiwan

M.S. IN COMMUNICATION ENGINEERING, DATA SCIENCE AND SMART NETWORKING GROUP

Sep. 2021 – Present

- **GPA:** 4.3/4.3
- Speech Processing and Machine Learning Laboratory. Advised by Prof. [Hung-yi Lee](#).
- Built the first **ASR transcription-free spoken question answering** system with 55.9 frame-level f1 score. Also, we release a new spoken question answering dataset with real and multi-speaker voices.
- Developed the first **single-instance test-time adaptation for automatic speech recognition**.
- Investigated the robustness of unsupervised speech recognition ([Wav2vec-U](#)) for **domain mismatched scenario**
- Protected human voice by adversarial attacks on voice cloning model.
- **Selected Courses:** Deep Learning for Human Language Processing, Machine Learning, Digital Speech Processing, Security and Privacy of Machine Learning

National Tsing Hua University

Hsinchu, Taiwan

PROGRAM. APPLIED ARTIFICIAL INTELLIGENCE

Sep. 2020 – Jun. 2021

- **GPA:** 4.3/4.3
- **Selected Courses:** Introduction to Artificial Intelligence, Introduction to Machine Learning, Deep Learning, Data Mining, Deep Learning and NLP Research Methodologies, Analysis and synthesis of digital audio signals

National Tsing Hua University

Hsinchu, Taiwan

B.S. IN BIOMEDICAL ENGINEERING AND ENVIRONMENTAL SCIENCES

Sep. 2017 – Jun. 2021

BIOIMAGING ENGINEERING GROUP

- **GPA:** 4.08/4.3, ranking: 1/48
- **Honors:** 3 Deans's List (top 5% students of the department), Phi Tau Phi Award, The Zhu Shun Yi He Qin Scholarship

Experience

Speech Processing and Machine Learning Lab

National Taiwan University

Taipei, Taiwan

UNDERGRADUATE RESEARCHER

July. 2020 - Aug. 2021

- Advisor: [Hung-yi Lee](#)
- Improved end-to-end speech recognition model from 21.59 WER to 11.42 WER on Librispeech 100 hour dataset.
- Implemented CTC-based Phoneme Recognition for the SUPERB benchmark, which is a large-scale benchmark for self-supervised pre-trained speech model.

National Center for High-Performance Computing

Hsinchu, Taiwan

National Applied Research Laboratories

SUMMER INTERN / RESEARCH ASSISTANT

Jun. 2019 - Jun. 2020

- Advisor: [Nan-You Chen](#)
- Low-dose CT, denoising reconstructed images by U-NET based deep neural network.
- From [IP TO IPO program \(FITI\)](#) top 40 group

Publications & Preprints

- Guan-Ting Lin, Yung-Sung Chuang, Ho-Lam Chung, Shu-wen Yang, Hsuan-Jui Chen, Shang-Wen Li, Abdelrahman Mohamed, Hung-yi Lee, Lin-shan Lee. "DUAL: Textless Spoken Question Answering with Speech Discrete Unit Adaptive Learning", *Interspeech 2022* [\[link\]](#)
- Guan-Ting Lin, Hung-Yi Lee. "Listen, Adapt, Better WER: Source-free Single-utterance Test-time Adaptation for Automatic Speech Recognition", *Interspeech 2022* [\[link\]](#)
- Guan-Ting Lin*, Chan-Jan Hsu*, Da-Rong Liu, Hung-Yi Lee, Yu Tsao. "Analyzing the Robustness of Unsupervised Speech Recognition", *ICASSP 2022* [\[link\]](#)
- Shu-wen Yang, Po-Han Chi, Yung-Sung Chuang, Cheng-I Jeff Lai, Kushal Lakhotia, Yist Y. Lin, Andy T. Liu, Jiatong Shi, Xuankai Chang, Guan-Ting Lin, Tzu-Hsien Huang, Wei-Cheng Tseng, Ko-tik Lee, Da-Rong Liu, Zili Huang, Shuyan Dong, Shang-Wen Li, Shinji Watanabe, Abdelrahman Mohamed, Hung-yi Lee. "SUPERB: Speech processing Universal PERFORMANCE Benchmark", *Interspeech 2021* [\[link\]](#)
- [Guan-Ting Lin](#), Manuel Giambi. "Context-gloss Augmentation for Improving Word Sense Disambiguation". *arXiv preprint arXiv:2110.07174*

Teaching

Machine Learning Summer School 2021, Taipei [\[link\]](#)

HEAD TEACHING ASSISTANT

National Taiwan University

2021 summer

31 virtual Machine Learning courses, Manage Facebook group for 1400 international participants and communicate with world-wide lecturers.

2021 Fall - Linear Algebra

TEACHING ASSISTANT

National Taiwan University

2021 Fall

Design 1D and 2D Discrete cosine transform homework for JPEG compression.

2021 Fall - Speech Processing Special Project

TEACHING ASSISTANT

National Taiwan University

2021 Fall

Design the special project for unsupervised speech recognition for about 20 students.

2022 Spring - Machine Learning 2022 Spring [\[link\]](#)

TEACHING ASSISTANT

National Taiwan University

2022 Spring

Design assignment for Black-box Adversarial Attack on CIFAR 10.

Honors & Awards

SCHOLARSHIP

2020 **The Zhu Shun Yi He Qin Scholarship**, The highest honor for National Tsing Hua University student with about 3000 USD prize Taiwan

Jun. 2021 **Phi Tau Phi Award**, top 1 graduation student of the department Taiwan

2018–9 **3 Deans's List**, top 5% students of the department, (2018 Spring/2018 Fall/2019 Fall) Taiwan

COMPETITION

Feb. 2021 **Excellent Achievement**, 2020 AI CUP Competition on Medical Dialogue Decision: Deidentity Task, 15/531 (top 3%) with 300 USD prize Taiwan

2020 **Top 40**, From IP TO IPO program (FITI). Innovation and entrepreneurship competition with 1000 USD prize Taiwan

2019 **Finalist**, Innovative Project Award of the college of Nuclear Science with 800 USD reward Taiwan

2018 **Honorable Mention**, Chinese Writing Contest held by the Writing Center of National Tsing Hua University Taiwan

Projects

End-to-End Speech Recognition Model

TRAIN A END-TO-END JOINT CTC/ATTENTION-BASED MODEL

Achieve 11.42% WER on Librispeech 100hr dataset. Code is available in [E2E-ASR-Pytorch](#)

Meta-StyleSpeech

HELP TRAINING A 16KHZ MELGAN VOCODER FOR MEL-TO-WAV CONVERSION.

Cooperate with the [Meta-StyleSpeech](#) project.

Skills

Programming Python, C, C++, Matlab, LaTeX

Deep Learning Framework Pytorch, Tensorflow, PyTorch Lightning