Guan-Ting (Daniel) **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*

- Speech Processing and Machine Learning Laboratory. Advised by Prof. Hung-yi Lee.
- Build the first **ASR transcription-free spoken question answering** system with about 55 frame-level f1 score. Also, we release a new spoken question answering dataset with real and multi-speaker voices. This work has been submitted to Interspeech 2022.
- Investigate the robustness of unsupervised speech recognition (Wav2vec-U) for **domain mismatched scenario**. The result has been accepted by ICASSP 2022.
- I developed the first **single-instance test-time adaptation for automatic speech recognition** system. This work has been submitted to Interspeech 2022.
- Protect your voice by adversarial attack on voice cloning model.

National Tsing Hua University *Hsinchu, Taiwan*

B.S. in Biomedical Engineering And Environmental Sciences

Program. Applied Artificial Intelligence *Sep. 2017 – Jun. 2021*

- **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
- **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, Algorithms, Introduction to Data Structure

Experience

Speech Processing and Machine Learning Lab
National Taiwan University *Taipei, Taiwan*

Undergraduate Researcher *July. 2020 - Aug. 2021*

- Advisor: *Hung-yi Lee*
- Improve end-to-end speech recognition model from 21.59 WER to 11.42 WER on Librispeech 100 hour dataset.
- Implement 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
National Applied Research Laboratories *Hsinchu, Taiwan*

Summer Intern / Research Assistant *Jun. 2019 - Jun. 2020*

- Advisor: *Nan-You Chen*
- 3DIC weakness detection by 3D-CNN
- Accelerate 3D image reconstruction by deep learning
- Low-dose CT by deep learning
- From IP TO IPO program (FITI) top 40 group

Cognitive Engineering and Computational Neuroscience Lab
National Yang Ming Chiao Tung University *Hsinchu, Taiwan*

Undergraduate research student *Sep. 2019 - Feb. 2020*

- Advisor: *Chun-Shu Wei*
- Learn EEG signal processing
- Built a authentication system based on EEG data by Deep Neural Network

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", *Submitted to Interspeech 2022* [link]
- **Guan-Ting Lin** Hung-Yi Lee. "Listen, Adapt, Better WER: Source-free Single-utterance Test-time Adaptation for Automatic Speech Recognition", *Submitted to Interspeech 2022*
- **Guan-Ting Lin***, Chan-Jan Hsu*, Da-Rong Liu, Hung-Yi Lee, Yu Tsao. "Analyzing the Robustness of Unsupervised Speech Recognition", *Accepted by 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", *Accepted by 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]   *National Taiwan University*

HEAD TEACHING ASSISTANT   *2021 summer*

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

Linear Algebra   *National Taiwan University*

TEACHING ASSISTANT   *2021 Fall*

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

Speech Processing Special Project   *National Taiwan University*

TEACHING ASSISTANT   *2021 Fall*

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

Machine Learning 2022 Spring [link]   *National Taiwan University*

TEACHING ASSISTANT   *2022 Spring*

Design homework for Adversarial Attack.

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