Guan-Ting **Lin**

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Research Interest

Speech and Audio Processing, Self-Supervised Learning, Spoken Language Understanding, Speech Paralinguistics.

Education

National Taiwan University   *Taipei, Taiwan*
DIRECT PhD FROM M.S. IN COMMUNICATION ENGINEERING, DATA SCIENCE AND SMART NETWORKING GROUP   *Sep. 2021 – Present*
- **GPA**: 4.24/4.3; Ranking: 15/158
- Speech Processing and Machine Learning Laboratory. Advised by Prof. Hung-yi Lee.
- **Selected Courses**: Deep Learning for Human Language Processing, Machine Learning, Digital Speech Processing, Security and Privacy of Machine Learning, Deep Learning for Music Analysis and Generation.

National Tsing Hua University   *Hsinchu, Taiwan*
B.S. IN BIOMEDICAL ENGINEERING & GRADUATE-LEVEL PROGRAM. 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
- **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.

Experience

Amazon Alexa AI   *Seattle, United States*
APPLIED SCIENTIST II INTERN   *June. 2023 - Sep. 2023*
- Worked with Prashanth Gurunath Shivakumar at Alexa ASR LM team on Paralinguistics-enhanced Multi-modal Large Language Model for conversational speech. The result was submitted to ICASSP 2024.

Amazon Alexa AI   *Cambridge, United States*
APPLIED SCIENTIST I INTERN   *July. 2022 - Oct. 2022*
- Worked with Chieh-Chi Kao and Qingming Tang at Alexa Perceptual Team. Proposed a weight-sharing Neural Architecture Search (NAS) approach on Acoustic Event Classification (AEC). By just training one supernet, we can search for specialized sub-networks across diverse resource constraints. The work was accepted to ICASSP 2023.

8th JASLT Summer Workshop   *Baltimore, United States*
VISITING RESEARCHER   *July. 2022*
- Work with Prof. Nigel Ward on self-supervised pre-training for prosody. The work was accepted to SLT 2022 and won the Best Paper Award.

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.

Publications & Preprints

- Guan-Ting Lin, Prashanth Gurunath Shivakumar, Ankur Gandhe, Chao-Han Huck Yang, Yile Gu, Shalini Ghosh, Andreas Stolcke, Hung-yi Lee, Ivan Bulyko, "Paralinguistics-Enhanced Large Language Modeling of Spoken Dialogue", ***Submitted to ICASSP 2024***
- Chyi-Jiunn Lin, Guan-Ting Lin, Yung-Sung Chuang, Wei-Lun Wu, Shang-Wen Li, Abdelrahman Mohamed, Hung-yi Lee, Lin-shan Lee,"SpeechDPR: End-to-End Spoken Passage Retrieval for Open-Domain Spoken Question Answering", ***Submitted to ICASSP 2024***
- Guan-Ting Lin*, Guan-Wei Wu*, Guan-Ting Lin, Shang-Wen Li, Hung-yi Lee. "Improving Textless Spoken Language Understanding with Discrete Units as Intermediate Target", ***Interspeech 2023*** [link]
- Guan-Ting Lin, Qingming Tang, Chieh-Chi Kao, Viktor Rozgic, Chao Wang. "Weight-sharing Supernet for Searching Specialized Acoustic Event Classification Networks Across Device Constraints", ***ICASSP 2023 (Poster)*** [link]
- Guan-Ting Lin*, Chi-Luen Feng*, Wei-Ping Huang, Yuan Tseng, Tzu-Han Lin, Chen-An Li, Hung-yi Lee, Nigel G. Ward. "On the Utility of Self-supervised Models for Prosody-related Tasks", ***SLT 2022 (Best Paper Award)***
- 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 (Poster)*** [link]
- Guan-Ting Lin, Shang-Wen Li, Hung-Yi Lee. "Listen, Adapt, Better WER: Source-free Single-utterance Test-time Adaptation for Automatic Speech Recognition", ***Interspeech 2022 (Oral)*** [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*

Honors & Awards

SCHOLARSHIP

2023	**Best Paper Award**, one of the two best papers in IEEE SLT 2022, awarded with 500 USD	*Doha, Qatar*
2023	**NTU Elite Doctoral Scholarship**, A 4-year scholarship, only one student of each department.	*Taiwan*
2023	**GICE Elite Doctoral Scholarship**, The joint 4-year scholarship from Graduate Institute of Communication Engineering and NVIDIA	*Taiwan*
2022	**ISCA Travel Grant**, awarded with 600 Euros for attending Interspeech 2022, only 60 students were selected.	*Incheon, Korea*
2022	**Appier scholarship for international top AI conferences**, awarded with 25000 NTD for Interspeech 2022.	*Taiwan*
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 in NTHU).	*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*

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.

2021 Fall - Linear Algebra   *National Taiwan University*

TEACHING ASSISTANT   *2021 Fall*

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

2021 Fall - Speech Processing Special Project   *National Taiwan University*

TEACHING ASSISTANT   *2021 Fall*

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

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

TEACHING ASSISTANT   *2022 Spring*

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

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