

Guan-Ting Lin

☎ (+886) 905286016 | ✉ daniel094144@gmail.com | 🏠 <https://daniellin94144.github.io/> | 📱 [DanielLin94144](#) | 🌐 <https://www.linkedin.com/in/guan-ting-lin-5084bb19b>

Research Interest

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

Education

National Taiwan University

DIRECT PHD FROM MS IN COMMUNICATION ENGINEERING, DATA SCIENCE AND SMART NETWORKING GROUP

Taipei, Taiwan

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

National Tsing Hua University

PROGRAM. APPLIED ARTIFICIAL INTELLIGENCE

Hsinchu, Taiwan

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

B.S. IN BIOMEDICAL ENGINEERING AND ENVIRONMENTAL SCIENCES

Hsinchu, Taiwan

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

Amazon Alexa

APPLIED SCIENTIST INTERN

Cambridge, United States

July. 2022 – Oct. 2022

- Manager: [Chieh-Chi Kao](#); Mentor: [Qingming Tang](#)
- Proposed a weight-sharing Neural Architecture Search (NAS) approach on Acoustic Event Classification (AEC). By just train one supernet, we can search for specialized sub-networks across diverse resource constraints. The results was submitted to ICASSP 2023.

Speech Processing and Machine Learning Lab

National Taiwan University

UNDERGRADUATE RESEARCHER

Taipei, Taiwan

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

National Applied Research Laboratories

SUMMER INTERN / RESEARCH ASSISTANT

Hsinchu, Taiwan

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, Qingming Tang, Chieh-Chi Kao, Viktor Rozgic, Chao Wang. "Weight-sharing Supernet for Searching Specialized Acoustic Event Classification Networks Across Device Constraints", **Submitted to ICASSP 2023**
- 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 Lakhota, 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

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|-----------|--|----------------|
| 2023 | Best Paper Award , one of the two best papers in IEEE SLT 2022, awarded with 500 USD | Doha, Qatar |
| 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

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|-----------|--|--------|
| 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 |

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