

Xuanjun Chen

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Research Interests

- Speech processing, Machine learning, Deepfake detection and localization

Education

National Taiwan University (NTU)

PH.D. STUDENT IN GRADUATE INSTITUTE OF COMMUNICATION ENGINEERING, GPA 4.30/4.30

M.S. IN COMPUTER SCIENCE AND INFORMATION ENGINEERING, GPA 4.19/4.30

- **Advisor:** Prof. [Jyh-Shing Roger Jang](#) and Prof. [Hung-yi Lee](#)

Taipei Taiwan

Sep. 2023 - Present

Sep. 2020 - Jan. 2023

National Taiwan University of Science and Technology (Taiwan Tech)

B.S. IN COMPUTER SCIENCE AND INFORMATION ENGINEERING, GPA 4.11/4.30

Taipei Taiwan

Sep. 2018 - Jun. 2020

Shenzhen University of Information Technology (fka Shenzhen Institute of Information Technology, SZIIT)

J.C. IN ELECTRONIC INFORMATION ENGINEERING TECHNOLOGY

Shenzhen China

Sep. 2015 - Jul. 2018

Selected Publications († indicates equal contribution.)

- [1] **Xuanjun Chen**, Haibin Wu, Chung-Che Wang, Hung-yi Lee, Jyh-Shing Roger Jang “**Multimodal Transformer Distillation for Audio-Visual Synchronization**”. in the 2024 International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2024), Seoul, Korea, April 2024.
- [2] **Xuanjun Chen**, Haibin Wu, Jyh-Shing Roger Jang, Hung-yi Lee “**Singing Voice Graph Modeling for SingFake Detection**”. in Interspeech 2024, Kos Island, Greece, Sept 2024.
- [3] **Xuanjun Chen**[†], Jiawei Du[†], Haibin Wu, Jyh-Shing Roger Jang, Hung-yi Lee “**Neural Codec-based Adversarial Sample Detection for Speaker Verification**”. in Interspeech 2024, Kos Island, Greece, Sept 2024.
- [4] Haibin Wu, **Xuanjun Chen**, Yi-Cheng Lin, Kai-wei Chang, Ho-Lam Chung, Alexander H. Liu, Hung-yi Lee “**Towards audio language modeling-an overview**”. in arXiv preprint arXiv:2402.13236, 2024.
- [5] Haibin Wu, Ho-Lam Chung, Yi-Cheng Lin, Yuan-Kuei Wu, **Xuanjun Chen**, Yu-Chi Pai, Hsiu-Hsuan Wang, Kai-Wei Chang, Alexander H. Liu, Hung-yi Lee “**Codec-SUPERB: An In-Depth Analysis of Sound Codec Models**”. in Findings of the Association for Computational Linguistics ACL 2024, Bangkok, Thailand, Aug 2024.
- [6] Haibin Wu, **Xuanjun Chen**, Yi-Cheng Lin, Jiawei Du, Kai-Wei Chang, Ke-Han Lu, Alexander Liu, Ho-Lam Chung, Yuan-Kuei Wu, Dongchao Yang, Songxiang Liu, Yi-Chiao Wu, Xu Tan, James Glass, Shinji Watanabe, and Hung-yi Lee “**Codec-SUPERB @ SLT 2024: A lightweight benchmark for neural codec models**”. in the 2024 IEEE Spoken Language Technology Workshop (IEEE SLT 2024), Macao, China, 2024.
- [7] Jiawei Du, I-Ming Lin, I-Hsiang Chiu, **Xuanjun Chen**, Haibin Wu, Wenze Ren, Yu Tsao, Hung-yi Lee, Jyh-Shing Roger Jang “**DFADD: The Diffusion and Flow-Matching based Audio Deepfake Dataset**”. in the 2024 IEEE Spoken Language Technology Workshop (IEEE SLT 2024), Macao, China, 2024.
- [8] Hsuan-Yu Lin, **Xuanjun Chen**, Jyh-Shing Roger Jang “**Singer separation for karaoke content generation**”. in The 27th Oriental COCOSDA Conference (O-COSDA 2024), Hsinchu, Taiwan, Oct 2024.
- [9] **Xuanjun Chen**[†], Haibin Wu[†], Helen Meng, Hung-yi Lee, Jyh-Shing Roger Jang “**Push-Pull: Characterizing the Adversarial Robustness for Audio-Visual Active Speaker Detection**”. in the 2022 IEEE Spoken Language Technology Workshop (IEEE SLT 2022), Doha, Qatar, Jan 2023.
- [10] **Xuanjun Chen**[†], Yen-Lun Liao[†], Chung-Che Wang, Jyh-Shing Roger Jang “**Adversarial Speaker Distillation for Counter-measure Model on Automatic Speaker Verification**”. in Proc. 2nd Symposium on Security and Privacy in Speech Communication (SPSC 2022), Incheon, Korea, Sept 2022.

Awards

2024	Google Conference Scholarship , Google LLC	Travel Grant
2024	National Science and Technology Council (NSTC) Conference Subsidies , NSTC Taiwan	Travel Grant
2020-2025	Distinguished Academic Record Award (5 years) , Taipei Kwong Tong Community Associations	Scholarship
2021	Ranked 3rd of the logical access track of the ASVspoof 2021 challenge , Interspeech 2021	3rd/42 Worldwide
2018-2020	Certificate of Achievement (Top 5%, 3 semesters) , Department of CSIE, Taiwan Tech	Scholarship
2017	National Bronze & Guangdong Provincial Gold Awards , 3rd China College Internet Entrep. Comp.	3rd Nationwide
2016-2017	National Encouragement Scholarship (Only 3%) & 3rd Prize of Academic Award (Top 20%)	SZIIT Scholarship

Research Experiences ([~] indicates the research proficiency)

Speech Processing and Machine Learning Lab, NTU, Advisor: Prof. Hung-yi Lee Sept. 2023 - Present

RESEARCH ASSISTANT

- **[Lead research]** Researched on **Singing Voice DeepFake Detection**
 - Proposed a SingGraph model for singing voice deepfake detection, which improves EER relatively for seen singers by 13.2%, for unseen singers by 24.3%, and unseen singers using different codecs by 37.1%. [\[Interspeech 2024\]](#)
- **[Collaboration]** Write a neural codecs overview [\[arXiv\]](#), build benchmark [\[Findings of ACL 2024\]](#), organize a challenge [\[SLT 2024\]](#).
- **[Mentorship]** Led 10 students on **TAIHUCAIS: TAIwan Humanities Conversational AI Knowledge Discovery System** project.

Multimedia Information Retrieval Lab, NTU, Advisor: Prof. Jyh-Shing Roger Jang Oct. 2020 - Present

RESEARCH ASSISTANT

- **[Lead research]** Researched on leveraging **Cross-attention Distillation for Audio-Visual Learning**.
 - Proposed multimodal Transformer distillation for the audio-visual synchronization model, reducing teacher parameters by 83.52%, achieving competitive performance and providing comprehensive analysis. [\[ICASSP 2024\]](#)
 - Received the [Google Conference Scholarship \(Asia-Pacific\)](#) of Google LLC
- **[Lead research]** Researched on the **Adversarial Robustness for Audio-Visual Learning** [\[IEEE SLT 2022\]](#)
 - Revealed the vulnerability of the audio-visual active speaker detection model in many ways, such as single- and multi-modal attacks, three-attack algorithms, white- and black-box attackers, and training-aware and inference-aware scenarios.
 - Proposed audio-visual interaction loss enables inter-class dispersion and intra-class compactness, which outperforms the adversarial training by 33.14 mAP (%) under multi-modal attacks.
- **[Collaboration]** Researched on **Automatic Speaker Verification Spoofing Countermeasures (ASVspoof)**
 - Proposed ASD-ResNetSE model combines generalized end-to-end pre-training and adversarial fine-tuning, achieving competitive performance with only 22.5% teacher parameters and 19.4% teacher MACs [\[ISCA SPSC 2022\]](#).
 - Ranked **3rd out of 42 submissions** in the logical access track of the ASVspoof 2021 challenge of **Interspeech 2021**.
- **[Mentorship]** Led 5 students on **Advanced Technologies for Designing Trustable AI Services** industry cooperation project.
 - Proposed neural-codec based adversarial sample detection method [\[Interspeech 2024\]](#).
 - Built the diffusion and flow-matching based audio deepfake dataset [\[SLT 2024\]](#).

Services

PROFESSIONAL SERVICES

2023-Now	Reviewer / Program Committee , EMNLP (2025), ACL (2024), ICASSP (2023-2024), LREC-COLING/COLING (2024-2025), MLSP (2024), IALP (2024), ECCV AVGenL (2024)
2024	Technical Committee , Codec-SUPERB Challenge at IEEE 2024 Spoken Language Technology Workshop (SLT 2024)
2024 Spr.	Teaching Assistant , EE5200: Introduction to Generative AI, NTU

CROSS-FUNCTIONAL SERVICES

2023-Now	Administrative Assistant , NVIDIA-NTU Artificial Intelligence Joint Research Center, NTU
2021-2022	Vice Director , Mainland Alumni Association, NTU
2019	Head Volunteer , The Fourth Cross-Strait Youth Maker Competition, Tongji University, Shanghai & Suzhou, China
2019	Propaganda Minister and Teaching Material Leader , Asia-Pacific University Volunteers Association, Taiwan Tech
2017-2018	Team Leader , Started a photography studio with 5 members while studying at SZIIT
2016-2017	Propaganda Minister , Led 20 members in Speaking Club's Propaganda Department of SZIIT

Open-Source Projects and Skills

Open Source	Official repository of MTDVocaLiST model for Audio-Visual Synchronization task (Starred 23)
Open Source	Official repository of SingGraph model for SingFake Detection task (Starred 20, Fork 4)
Languages	Python, C/C++, LaTeX, Shell Scripting
Libraries & Toolkits	PyTorch, Huggingface transformers, PyTorch Lightning, Numpy, Pandas, Matplotlib