Tsun-An Hsieh

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Summary

Ph.D. student in Computer Science at the University of Illinois Urbana–Champaign, advised by Prof. Minje Kim. Research focuses on machine learning for speech and audio processing, with contributions to speech enhancement, source separation, generative modeling, and conversational speech. Publications appear in ICASSP, Interspeech, WASPAA, and related venues. Industry research experience includes internships at Meta Reality Labs and Microsoft Research, focusing on efficient neural speech enhancement and real-time diffusion models.

Education

University of Illinois Urbana-Champaign
Urbana, IL

Ph.D. Student in Computer Science — *Aug 2024 - Present*

- Advisor: Prof. Minje Kim
- Recipient of the WASPAA 2025 Travel Grant [A-3]
- Recipient of CS PhD Fellowship Addendum [F-2]

Indiana University
Bloomington, IN

Ph.D. Student in Intelligent Systems Engineering — *Aug 2022 - May 2024*

- Advisor: Prof. Minje Kim
- Recipient of Luddy Doctoral Summer Fellowship [F-1]

National Taiwan University
Taipei, Taiwan

M.S. in Networking and Multimedia — *Sep 2016 - Jun 2018*

- Advisor: Prof. Chiou-Shann Fuh
- Thesis: 3D Face Identification and Reconstruction with Range Sensor

Chang Gung University
Taoyuan, Taiwan

B.S. in Computer Science and Information Engineering — *Sep 2011 - Jun 2015*

- First Prize in the Smart Head-mounted Product and Application Innovation Competition [A-1]

Honors & Awards

Fellowships

2024 **[F-2] CS PhD Fellowship Addendum**, Siebel School of Computing and Data Science — *Urbana, IL*
2022 **[F-1] Luddy Doctoral Summer Fellowship**, Luddy School of Informatics, Computing, and Engineering — *Bloomington, IN*

Awards

2025 **[A-3] Travel Grant**, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) — *Tahoe City, CA*
2020 **[A-2] Best Multi-round Dialogue System**, Formosa Grand Challenge [news] — *Taipei, Taiwan*
2016 **[A-1] First Prize**, Smart Head-mounted Product and Application Innovation Competition [news] — *Taipei, Taiwan*

Research Experiences

University of Illinois Urbana-Champaign
Urbana, IL

Research Assistant — *Aug 2024 - Present*

- Advisors: Prof. Minje Kim and Prof. Paris Smaragdis
- Generative target speaker extraction using flow-matching [C-10]
- Personalized target speaker extraction [C-8]

Indiana University
Bloomington, IN

Research Assistant — *Aug 2022 - May 2024*

- Advisor: Prof. Minje Kim
- Textual regularization for speech source separation using speech-text alignment [C-7]

Audio and Acoustics Research Group, Microsoft Research
Redmond, WA

Research Intern — *May 2025 - Aug 2025*

- Mentor: Dr. Sebastian Braun
- Real-time, causal flow-matching model for speech restoration achieving 10 ms algorithmic latency [C-9]

Reality Labs Research Audio, Meta *Redmond, WA*

Research Scientist Intern *May 2023 - Aug 2023*

- Mentor: Dr. Ashutosh Pandey
- Multichannel neural beamformer for real-time and resource efficient speech enhancement [C-6]

Academia Sinica *Taipei, Taiwan*

Research Assistant *Dec 2018 - Jul 2022*

- Advisor: Dr. Yu Tsao
- Causal inference for speech enhancement [C-5]
- Efficient speech enhancement and recovery [J-1, C-4]
- Metric-oriented/agnostic objective function design for speech enhancement [C-1, C-2, C-3]
- Award: Best Multi-round Dialogue System in Formosa Grand Challenge [A-2]

Academic Services

Reviewer

- IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2023–2025
- Conference on Neural Information Processing Systems (NeurIPS) 2024
- IEEE Automatic Speech Recognition and Understanding Workshop (ASRU) 2023
- IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2023

Publications

Journal Articles

- [J-1] **Tsun-An Hsieh**, Hsin-Min Wang, Xugang Lu, Yu Tsao, "WaveCRN: An Efficient Convolutional Recurrent Neural Network for End-to-End Speech Enhancement," *IEEE Signal Processing Letters*, vol. 27, pp. 2149-2153, 2020.

Conference Papers

- [C-10] **Tsun-An Hsieh** and Minje Kim, "Adaptive Deterministic Flow Matching for Target Speaker Extraction," submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.
- [C-9] **Tsun-An Hsieh** and Sebastian Braun, "Towards Real-Time Generative Speech Restoration with Flow-Matching," submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.
- [C-8] **Tsun-An Hsieh** and Minje Kim, "TGIF: Talker Group-Informed Familiarization of Target Speaker Extraction," in *Proc. of the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, 2025.
- [C-7] **Tsun-An Hsieh**, Heeyoul Choi, and Minje Kim, "Multimodal Representation Loss Between Timed Text and Audio for Regularized Speech Separation," in *Proc. Interspeech*, 2024.
- [C-6] **Tsun-An Hsieh**, Jacob Donley, Daniel Wong, Buye Xu, Ashutosh Pandey, "On The Importance of Neural Wiener Filter for Resource Efficient Multichannel Speech Enhancement," in *Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2024.
- [C-5] **Tsun-An Hsieh**, Chao-Han Huck Yang, Pin-Yu Chen, Sabato Marco Siniscalchi, and Yu Tsao, "Inference and Denoise: Causal Inference-based Neural Speech Enhancement," in *Proc. of the IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, 2023. (*Oral presentation*)
- [C-4] Yu-Chen Lin, **Tsun-An Hsieh**, Kuo-Hsuan Hung, Cheng Yu, Harinath Garudadri, Yu Tsao, Tei-Wei Kuo, "Speech Recovery For Real-World Self-Powered Intermittent Devices," in *Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2022.
- [C-3] **Tsun-An Hsieh**, Cheng Yu, Szu-Wei Fu, Xugang Lu, Yu Tsao, "Improving Perceptual Quality by Phone-Fortified Perceptual Loss using Wasserstein Distance for Speech Enhancement," in *Proc. Interspeech*, 2021.
- [C-2] Szu-Wei Fu, Cheng Yu, **Tsun-An Hsieh**, Peter Plantinga, Mirco Ravanelli, Xugang Lu, Yu Tsao, "MetricGAN+: An Improved Version of MetricGAN for Speech Enhancement," in *Proc. Interspeech*, 2021.
- [C-1] Szu-Wei Fu, Chien-Feng Liao, **Tsun-An Hsieh**, et al. "Boosting Objective Scores of a Speech Enhancement Model by MetricGAN Post-processing," in *Proc. of the IEEE Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)*, 2020. (*Equal contribution*)