

# Tsun-An Hsieh

PH.D. STUDENT · RESEARCH ASSISTANT

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## Summary

Ph.D. student in Computer Science at the University of Illinois Urbana-Champaign, advised by Prof. [Minje Kim](#) and Prof. [Paris Smaragdis](#). 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 Meta Reality Labs and Microsoft Research, where I worked on efficient neural speech enhancement and real-time diffusion models.

## Education

### University of Illinois Urbana-Champaign

PH.D. STUDENT IN COMPUTER SCIENCE

Urbana, IL

Aug 2024 - Present

- Advisors: Prof. [Minje Kim](#) and Prof. [Paris Smaragdis](#)
- Recipient of CS PhD Fellowship Addendum [F-2]

### Indiana University

PH.D. STUDENT IN INTELLIGENT SYSTEMS ENGINEERING

Bloomington, IN

Aug 2022 - May 2024

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

### National Taiwan University

M.S. IN NETWORKING AND MULTIMEDIA

Taipei, Taiwan

Sep 2016 - Jun 2018

- Advisor: Prof. [Chiou-Shann Fuh](#)
- Thesis: [3D Face Identification and Reconstruction with Range Sensor](#)

### Chang Gung University

B.S. IN COMPUTER SCIENCE AND INFORMATION ENGINEERING

Taoyuan, Taiwan

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

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

RESEARCH ASSISTANT

Urbana, IL

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

RESEARCH ASSISTANT

Bloomington, IN

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

RESEARCH INTERN

Redmond, WA

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

RESEARCH SCIENTIST INTERN

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

Redmond, WA

May 2023 - Aug 2023

## Academia Sinica

RESEARCH ASSISTANT

Taipei, Taiwan

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

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### 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

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### 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)