

Hanyu Meng

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Research Interests

I am originally from Beijing, China, and have been based in Sydney, Australia since 2018. My research focuses on binaural and spatial hearing for machine listening, with an emphasis on computational auditory modelling and deep neural networks that emulate human auditory processing. I also have experience in speech and audio synthesis, binaural speech enhancement, robust automatic speech recognition, and room-acoustic modelling. In addition, I am interested in music information retrieval (MIR), including symbolic music understanding, automatic music transcription, and generative AI for MIR. I am a student member of the International Speech Communication Association (ISCA) and the IEEE Signal Processing Society (SPS).

Education

- 2022 – Current **Ph.D., University of New South Wales (UNSW, Sydney)** in Speech Signal Processing
Research Project: *Biologically inspired selective machine hearing for binaural modelling*
Supervisors: *Prof Eliathamby Ambikairajah, A/Prof Vidhyasaharan Sethu*
- 2018 – 2022 **Bachelor of Engineering (Honours), University of New South Wales (UNSW, Sydney)** in Telecommunications (First Class Honours).
Honours Thesis title: *Singing Voice Separation by Embedding Accompaniment Repetitive Features into the Deep Neural Network.*
Weighted Average Mark (WAM): 85.77/100.

Working Experiences

- June 2026 - Dec 2026 (Incoming) **Research Scientist Intern @ Meta, Cambridge, UK**
★ **Mentor:** Jesus M Alvarez, Juan Azcarreta Ortiz
★ Develop new open-ear rendering methods which improve listening experience of speech-in-noise.
- June 2025 - July 2025 **R&D Engineer Intern @ Sony Corporation, Osaki, Tokyo, Japan**
★ **Mentor:** Tomohiro Sawada, Keiichi Taguchi
★ Designing a customizable interface for music-style transfer to advance Sony's Sound AI business.
- Jan 2025 - June 2025 **Research Intern @ Sony Computer Science Laboratory, Tokyo, Japan**
★ **Mentor:** Taketo Akama
★ Developing an instrument sound synthesis model using diffusion-based generative models.
- May 2024 - September 2024 **Research Intern @ Dolby Laboratories, Sydney, Australia**
★ **Mentors:** Jeroen Breebaart, Jeremy Stoddard

Working Experiences (continued)

	★ Acoustic Context (DRR, T60, C50, Room Volume, Sound Orientation) Estimation from Ambisonic Speech Recordings ★ Published a paper for ICASSP2025. ★ Extend the conference paper to a EURASIP journal paper accepted by Journal on Audio Speech and Music Processing.
February 2021 - July 2021	Research Assistant @ Institute of Software, Chinese Academy of Science ★ Parallel Computing ★ Apply deep learning-based image segmentation to industry (vehicle fault detection)
December 2019 - February 2020	Telecommunication Intern @ China Telecom Cloud Computing Co., Ltd, Beijing, China ★ Remote access the switch devices for operation and maintenance using a script written by python ★ Equipment operation and maintenance ★ Cyber Security
May 2018 — July 2018	Algorithm Intern @ Beijing Ultrapower Software, New Singularity international technology development Co., Ltd. ★ Learning basic knowledge about the operation system ★ Learning the application of C and C++ in computer games

Research Publications

Conference Paper

- 1 H. Chen, **H. Meng**, G. Bhattacharya, L. Lu, J. Kimball, and R. Rossi, "Auto-matchcut: An audio-visual retrieval framework for seamless match cutting," in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.
- 2 **H. Meng**, V. Sethu, E. Ambikairajah, Q. Zhang, and H. Li, "Adaptive per-channel energy normalization front-end for robust audio signal processing," in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.
- 3 Z. He, **H. Meng**, D. Huang, and R. Togneri, "Joint estimation of piano dynamics and metrical structure with a multitask multi-scale cnn," in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2026.
- 4 **H. Meng**, J. Breebaart, J. Stoddard, V. Sethu, and E. Ambikairajah, "Blind estimation of sub-band acoustic parameters from ambisonics recordings using spectro-spatial covariance features," in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2025.  DOI: 10.1109/ICASSP49660.2025.10887842.
- 5 **H. Meng**, Q. Zhang, X. Zhang, V. Sethu, and E. Ambikairajah, "Binaural selective attention model for target speaker extraction," in *Proc. Interspeech*, 2024, pp. 4323–4327.  DOI: 10.21437/Interspeech.2024-683.
- 6 X. Zhang, D. Liu, H. Liu, Q. Zhang, **H. Meng**, L. P. Garcia, E. S. Chng, and L. Yao, "Speaking in wavelet domain: A simple and efficient approach to speed up speech diffusion model," in *Empirical Methods in Natural Language Processing (EMNLP)*, 2024.

- 7 **H. Meng**, V. Sethu, and E. Ambikairajah, "What is Learnt by the LEArnable Front-end (LEAF)? Adapting Per-Channel Energy Normalisation (PCEN) to Noisy Conditions," in *Proc. Interspeech*, 2023, pp. 2898–2902.  DOI: 10.21437/Interspeech.2023-1617.

Journal Paper

- 1 **H. Meng**, J. Breebaart, J. Stoddard, V. Sethu, and E. Ambikairajah, "A unified deep learning framework for estimating acoustic context parameters from first order ambisonic speech recordings," *EURASIP Journal on Audio, Speech, and Music Processing*, 2026.  DOI: 10.1186/s13636-025-00443-0.

Awards

- 2025 IEEE Signal Processing travel grant for ICASSP 2025
- 2024 UNSW 3 minute thesis (3MT) Runner-up Prize in School of Electrical Engineering and Telecommunications
- 2022 University International Postgraduate Award (UIPA), The University of New South Wales
- 2021 2021 Taste of Research Scholarship — A Green Design of UAV-assisted Backscatter Communication System, The University of New South Wales
- 2021 Dean's Honour List, The University of New South Wales
- 2019 2019 Dean's Honour List, The University of New South Wales

Teaching Experiences

- February 2021 — December 2024 **Lab demonstrator, University of New South Wales School of Electrical Engineering and Telecommunications, Sydney**
Demonstrate for signal processing courses ranging from first year to fourth year undergraduate (ELEC2134, TELE3113 (Head Demo), ELEC4622, ELEC3104, ELEC9123)
- Help students resolve problems during experiments and mark for their performance
 - Answer students' questions about using LTSpice for circuit simulation and MATLAB Coding for signal processing
- May 2022 — December 2024 **Marker, University of New South Wales School of Electrical Engineering and Telecommunications, Sydney**
- TELE3113: Work as a marker for midterm, final exam papers and students' lab reports.
- ELEC3104: Work as a marker for midterm, final exam papers and students' project delivery.
- ELEC1111: Work as a marker for midterm and final exam papers.

Skills

- Coding**
- Python/Pytorch (proficient)
 - Matlab (proficient)
 - C/C++ (basic)
- Languages**
- English (fluent)
 - Mandarin (native)
 - Japanese (beginner)

Volunteer and Other Activities

2023	One-on-One Mentoring session as a mentee in Interspeech 2023 (mentor: Dr Marc Delcroix)
2024	One-on-One Mentoring session as a mentee in Interspeech 2024 (mentor: Dr Zhengjun Yue) Online Volunteer in ISMIR 2024
2025	Woman in MIR (WIMIR) 2025 as a mentee (mentor: Dr Fabio Morreale)
Reviewer	ICASSP, Interspeech, IEEE Transactions on Affective Computing