

## Personal Particulars

**Name:** Pan Zexu      **Phone:** +65 98945592  
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## Education

<b>Ph.D. Degree:</b>	National University of Singapore (NUS), Institute of Data Science	Aug 2019-Now
<b>Bachelor's Degree:</b>	Nanyang Technological University (NTU), (GPA 4.87/5.0)	Aug 2015-Aug 2019
	University of Maryland, USA. (Exchange program)	Jul 2016-Dec 2016

## Research Interests

I am interested in artificial intelligence, deep learning, and their applications on but not limited to speech processing, such as multi-modal speech enhancement, speaker extraction, speaker diarization, robust automatic speech recognition, multi-modal representation learning, etc.

## Publications

- [1] **Z. Pan**, R. Tao, C. Xu, and H. Li, "Selective Listening by Synchronizing Speech with Lips," IEEE/ACM Trans. Audio, Speech, Lang. Process., vol. 30, pp. 1650-1664, 2022.
- [2] **Z. Pan**, M. Ge, and H. Li, "USEV: Universal Speaker Extraction with Visual Cue," IEEE/ACM Trans. Audio, Speech, Lang. Process., vol. 30, pp. 3032-3045, 2022
- [3] **Z. Pan**, X. Qian, and H. Li, "Target Speaker Extraction with Co-speech Gestures Cue," IEEE Signal Processing Letter, vol. 29, pp. 1467-1471, 2022.
- [4] **Z. Pan**, M. Ge, and H. Li, "A Hybrid Continuity Loss to Reduce Over-Suppression for Time-domain Target Speaker Extraction," in Proc. INTERSPEECH, 2022,
- [5] **Z. Pan**, R. Tao, C. Xu, and H. Li, "Muse: Multi-modal target speaker extraction with visual cues," in Proc. ICASSP, 2021, pp. 6678-6682.
- [6] **Z. Pan**, Z. Luo, J. Yang, and H. Li, "Multi-Modal Attention for Speech Emotion Recognition," in Proc. INTERSPEECH, 2020, pp. 364-368.
- [7] **Z. Pan**, W. Wang, M. Borsdorf, and H. Li, "ImagineNET: Target Speaker Extraction with Intermittent Visual Cue through Embedding Inpainting," in Proc. ICASSP, 2023.
- [8] **Z. Pan**, G. Wichern, F. Germain, A. Subramanian, and J. Le Roux, "Towards End-to-end Speaker Diarization in the Wild," submitted to INTERSPEECH 2023.
- [9] R. Tao, **Z. Pan**, RK Das, Z. Shou, H. Li "Is Someone Speaking? Exploring Long-term Temporal Features for Audio-visual Active Speaker Detection," ACM MM, 2021.
- [10] R. Tao, **Z. Pan**, RK Das, XY. Qian, Z. Shou, H. Li "NUS-HLT Report for ActivityNet Challenge 2021 AVA (Speaker)" ActivityNet Challenge at CVPR workshop, 2021. (**2<sup>nd</sup> Runner up**)
- [11] T. Wang, **Z. Pan**, M. Ge, Z. Yang, and H. Li, "Time-domain Speech Separation Networks with Graph Encoding Auxiliary," IEEE Signal Processing Letter, vol. 30, pp. 110-114, 2023.
- [12] X. Qian, M. Madhavi, **Z. Pan**, J. Wang and H. Li, "Multi-Target DoA Estimation with an Audio-Visual Fusion Mechanism," in Proc. ICASSP, pp. 4280-4284.
- [13] J. Li, M. Ge, **Z. Pan**, L. Wang, and J. Dang, "VCSE: Time-domain visual-contextual speaker extraction network," in Proc. INTERSPEECH, 2022, pp. 906-910.

## Research Experiences

<b>Internship at Mitsubishi Electric Research Laboratories, USA. (MERL)</b>	Aug 2022-Dec 2022
Derive and implement new models and optimization methods for audio analysis with applications to speaker diarization, speech enhancement, and source separation in challenging multi-source and/or far-field scenarios, using advanced machine learning techniques.	
<b>Internship at Delta-NTU Cyber Physical Security Laboratory</b>	Jan 2018-Jun 2018
Design a fully automated algorithm for a robotic arm to construct a 3D model for an object; design algorithms on the on-board computer for machine automation.	

**Lab attachment in NTU Internet of things lab**

May 2017-Jul 2017

Assist in R&D of autonomous vehicles, including data acquisition and analysis.

**URECA: UAV obstacle avoidance, target tracking and pursuit using millimetre-wave radar**

Aug 2017-Jun 2018

Acquire and analyze the millimeter-wave radar for obstacle/target detection and tracking. Design and implement the control algorithm for autonomous UAV autonomous obstacle bypass, target tracking, and pursuit function.

## Teaching Experiences

**NUS Graduate Teaching Assistant**

Jan 2020-Now

EE2211 Introduction to Machine Learning: Tutor for tutorials.

EE2026 Digital Design: Tutor for Verilog programming.

## Scholarships

**High School:**

Ministry of Education Senior Middle 1 Scholarship

Jan 2011-Dec 2014

**Bachelor:**

NTU Science and Engineering Undergraduate Scholarship

Aug 2015-Aug 2019

**Ph.D.:**

NUS Integrative Science and Engineering Scholarship

Aug 2019-now