YUCHEN HU

(+65)-8039-2078 ◇ yuchen005@e.ntu.edu.sg ◇ Homepage ◇ Google Scholar ◇ GitHub

EDUCATION

Nanyang Technological University 08/2021 - 10/2025
Ph.D. in Computer Science. Supervisor: Eng Siong Chng. *Singapore*

University of Science and Technology of China 09/2016 - 06/2020
B.Eng. in Automation. GPA: 3.76/4.3 (Rank: Top 5%). [Transcript] *Hefei, China*

RESEARCH & INTERNSHIPS

Nanyang Technological University 08/2021 - Present
Research Assistant, Supervisor: Eng Siong Chng

- **Large Language Models (LLMs)**

  - *Generative Seq2seq Learning:* We propose a generative error correction (GER) framework that uses LLM to generate the ground-truth transcription from N-best hypotheses in seq2seq tasks (e.g., ASR, AST, MT). [5] [4] [3] [2]

  - *Text-to-Speech Synthesis with Human Feedback:* We introduce RLHF techniques into TTS models to improve the subjective quality of synthesized speech.

- **Speech Processing**

  - *Speech Recognition:* We propose STAR, a source-free unsupervised domain adaptation method, which can adapt speech foundation models (e.g., Whisper) to target domains using **less than one-hour unlabeled data**. [1]

  - *Robustness in Speech Recognition:* We propose several noise-robust ASR approaches under adverse conditions, including front-end enhancement, feature quantization, GER denoising, etc. [14] [13] [12] [9] [4]

  - *Speech Enhancement and Separation*: We propose a speech enhancement (SE) approach using classifier-guided diffusion model, and we explore improving noise-robustness of speech separation with SE front-end. [10] [11]

- **Multimodal**

  - *Audio-visual Representation Learning:* We propose several audio-visual speech recognition approaches. [6] [7] [8]

iFLYTEK AI Research & USTC NEL-SLIP 05/2020 - 07/2021
Research Intern, Supervisor: Lirong Dai

- *Simultaneous Speech Translation:* Develop a cross-attention augmented transducer (CAAT) system with USTC-NELSLIP team and achieve the 1-st Place at IWSLT 2021 Evaluation Campaign. [15]
- *Streaming Speech Recognition:* Improve decoding efficiency of Hybrid Autoregressive Transducer by pruning.

PUBLICATIONS & PREPRINTS

[1] **Y. Hu**, C. Chen, C. H. H. Yang, C. Qin, P. Y. Chen, E. S. Chng, C. Zhang, *"Self-Taught Recognizer: Toward Unsupervised Adaptation for Speech Foundation Models"*, **Under Review**.

[2] **Y. Hu**, C. Chen, C. H. H. Yang, R. Li, D. Zhang, Z. Chen, E. S. Chng, *"GenTranslate: Large Language Models are Generative Multilingual Speech and Machine Translators"*, **ACL 2024**. [Paper] [Code] [Data]

[3] **Y. Hu**, C. Chen, C. Qin, Q. Zhu, E. S. Chng, R. Li, *"Listen Again and Choose the Right Answer: A New Paradigm for Automatic Speech Recognition with Large Language Models"*, **ACL 2024**. [Paper]

[4] **Y. Hu**, C. Chen, C. H. H. Yang, R. Li, C. Zhang, P. Y. Chen, E. S. Chng, *"Large Language Models are Efficient Learners of Noise-Robust Speech Recognition"*, **ICLR 2024 (Spotlight, Top 5%)**. [Paper] [Code] [Data]

[5] C. Chen*, **Y. Hu***, C. H. H. Yang, S. M. Siniscalchi, P. Y. Chen, E. S. Chng, *"HyPoradise: An Open Baseline for Generative Speech Recognition with Large Language Models"*, **NeurIPS 2023**. [Paper] [Code] [Data]

[6] **Y. Hu**, R. Li, C. Chen, C. Qin, Q. Zhu, E. S. Chng, *"Hearing Lips in Noise: Universal Viseme-Phoneme Mapping and Transfer for Robust Audio-Visual Speech Recognition"*, **ACL 2023 (Oral)**. [Paper] [Code]

[7] **Y. Hu**, C. Chen, R. Li, H. Zou, E. S. Chng, *"MIR-GAN: Refining Frame-Level Modality-Invariant Representations with Adversarial Network for Audio-Visual Speech Recognition"*, **ACL 2023 (Oral)**. [Paper] [Code]

[8] **Y. Hu**, R. Li, C. Chen, H. Zou, Q. Zhu, E. S. Chng, *"Cross-Modal Global Interaction and Local Alignment for Audio-Visual Speech Recognition"*, **IJCAI 2023**. [Paper] [Code]

[9] **Y. Hu**, C. Chen, Q. Zhu, E. S. Chng, *"Wav2code: Restore Clean Speech Representations via Codebook Lookup for Noise-Robust ASR"*, **IEEE/ACM TASLP, 2023**. [Paper]

[10] **Y. Hu**, C. Chen, R. Li, Q. Zhu, E. S. Chng, *"Noise-aware Speech Enhancement using Diffusion Probabilistic Model"*, **Under Review**. [Paper] [Code]

[11] **Y. Hu**, C. Chen, H. Zou, X. Zhong, E. S. Chng, *"Unifying Speech Enhancement and Separation with Gradient Modulation for End-to-End Noise-Robust Speech Separation"*, **ICASSP 2023**. [Paper] [Code]

[12] **Y. Hu**, C. Chen, R. Li, Q. Zhu, E. S. Chng, *"Gradient Remedy for Multi-Task Learning in End-to-End Noise-Robust Speech Recognition"*, **ICASSP 2023**. [Paper] [Code]

[13] **Y. Hu**, N. Hou, C. Chen, E. S. Chng, *"Dual-Path Style Learning for End-to-End Noise-Robust Speech Recognition"*, **InterSpeech 2023**. [Paper] [Code]

[14] **Y. Hu**, N. Hou, C. Chen, E. S. Chng, *"Interactive Feature Fusion for End-to-End Noise-Robust Speech Recognition"*, **ICASSP 2022**. [Paper] [Code]

[15] D. Liu, M. Du, X. Li, **Y. Hu**, L. Dai, *"The USTC-NELSLIP Systems for Simultaneous Speech Translation Task at IWSLT 2021"*, **IWSLT 2021**. [Paper]

SERVICES

Reviewer	ACL (23-24), ARR (23-24), EMNLP (23), AAAI (24), ICASSP (22,24), InterSpeech (22-24)
Volunteer	EMNLP (23), ICASSP (22)

SKILLS

Programming Languages	Python, C, Matlab
Deep Learning	PyTorch, HuggingFace, Fairseq, ESPnet, SpeechBrain, lit-gpt
English Levels	TOEFL (104, R30/L28/S22/W24), GRE (329+4.0), CET-6 (619), CET-4 (620)

HONORS & AWARDS

- ACL 2023 Area Chair Award 07/2023
- Winner of IWSLT 2021 Evaluation Campaign 08/2021
- USTC Excellent Graduate (Top 10%) 06/2020
- Scholarship of SIMIT, Chinese Academy of Sciences (Top 5%) 10/2018
- USTC Outstanding Student Scholarship (Top 5%) 10/2017 & 10/2019