WEI LIU

Electronic Engineering · PhD student

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Research Interests

Speech and Language Processing, Automatic Speech Recognition (ASR), End-to-end ASR, Children Speech Recognition, and Neural Confidence Measure for ASR. Self-supervised learning, Speech Representation Learning, Domain adaptation, and Parameter-efficient Fine-tuning (PEFT). Large Language Model (LLM) for Speech/Audio and Multi-modality Understanding via LLM, etc.

Education

The Chinese University of Hong Kong (CUHK) — *Hong Kong, China*

Ph.D in Electronic Engineering — *Sep. 2019 - Present*

- Supervisor: Prof. Tan LEE
- Laboratory: DSP and Speech Technology Laboratory

The Harbin Institute of Technology (HIT) — *Weihai, China*

B.E. in Electronic Information Engineering — *Sep. 2015 - July. 2019*

- GPA: 3.96/4.0
- Rank in Major: 1/104

Awards

Scholarship

2018 **China National Scholarship**, *Weihai, China*

2017 **China National Scholarship**, *Weihai, China*

2016 **China National Scholarship**, *Weihai, China*

To Be Published

- **Under Working**
- TBD.
- **Under Review**
- **W. Liu**, J. Hou, D. Yang, M. Cao, and T. Lee, "A parameter-efficient language extension framework for multi-lingual asr"
- **W. Liu**, J. Hou, D. Yang, M. Cao, and T. Lee, "Lupet: Incorporating hierarchical information path into multi-lingual asr," arXiv preprint arXiv:2401.03689, 2024.

Publications

- **First Author**
- **W. Liu**, Y. Qin, Z. Peng, and T. Lee, "Sparsely shared lora on whisper for child speech recognition," arXiv preprint arXiv:2309.11756, 2023 - - ICASSP 2024
- **W. Liu**, Z. Peng, and T. Lee, "Comflp: Correlation measure based fast search on asr layer pruning," arXiv preprint arXiv:2309.11768, 2023 - - Interspeech 2023
- **W. Liu**, K. Fu, X. Tian, S. Shi, W. Li, Z. Ma, and T. Lee, "An asr-free fluency scoring approach with self-supervised learning," arXiv preprint arXiv:2302.09928, 2023. - - ICASSP 2023
- **W. Liu**, K. Fu, X. Tian, S. Shi, W. Li, Z. Ma, and T. Lee, "Leveraging phone-level linguistic-acoustic similarity for utterance-level pronunciation scoring," arXiv preprint arXiv:2302.10444, 2023. - - ICASSP 2023
- Y. Qin*, **W. Liu***, Z. Peng*, S.-I. Ng, J. Li, H. Hu, and T. Lee, "Exploiting pre-trained asr models for alzheimer's disease recognition through spontaneous speech," arXiv preprint arXiv:2110.01493, 2021. - - NCMMSC 2021

- **W. Liu** and T. Lee, "Utterance-level neural confidence measure for end-to-end children speech recognition," in 2021 IEEE Automatic Speech Recognition and Understanding Workshop (ASRU). IEEE, 2021, pp. 449–456. - - ASRU 2021
- S.-I. Ng*, **W. Liu***, Z. Peng, S. Feng, H.-P. Huang, O. Scharenborg, and T. Lee, "The cuhk-tudelft system for the slt 2021 children speech recognition challenge," arXiv preprint arXiv:2011.06239, 2020. - - SLT 2021 CSRC workshop
- **Co-Author**
- Y. Tian, **W. Liu**, and T. Lee, "Diffusion-based mel-spectrogram enhancement for personalized speech synthesis with found data," arXiv preprint arXiv:2305.10891, 2023 - -ASRU 2023
- J. Li, **W. Liu**, Z. Zhang, J. Wang, and T. Lee, "Model compression for dnn-based speaker verification using weight quantization," arXiv preprint arXiv:2210.17326, 2022. - - Interspeech 2023
- J. Li, **W. Liu**, and T. Lee, "Editnet: A lightweight network for unsupervised domain adaptation in speaker verification," arXiv preprint arXiv:2206.07548, 2022. - - Interspeech 2022

Experiences

- **Internships**
- Aug. 2023 - Feb. 2024: GVoice Team, Tencent [Shanghai, China]
- June. 2022 - Oct. 2022: Speech & Audio Team, AI Lab, ByteDance [Beijing, China]
- **Challenges**
- July. 2021 - Sep. 2021: Alzheimer's disease (AD) Recognition Challenge of NCMMSC 2021
- Feb. 2021 - Mar. 2021: COVID-19 Cough and COVID-19 Speech Sub-Challenges of INTERSPEECH 2021
- Aug. 2020 - Oct. 2020: 2021 SLT Children Speech Recognition Challenge (CSRC)
- **Seminar & Talk**
- Mar. 2023: Augmented Language Model – learn to reason and use tools [NC State]
- Dec. 2022: L2 Speech Assessment [CUHK]
- **Teaching Assistant**
- Introduction to Digital Singal Processing (ELEG 3503)
- Introduction to Electronic System Design (ELEG 2700)
- Multivariable Calculus for Engineers (ENGG 1130)

Skills

- Experienced in Python and Shell scripts, using Pytorch as the Deep learning framework.
- Familiar with the popular toolkits in the speech community, e.g., Kaldi, Espnet, Wenet, S3prl, and Hugging Face.
- Passionate about exploring cutting-edge technologies in the broader field, particularly in NLP, CV and ML.
- Passionate about discussion and collaborative communication to achieve a shared goal.