Tinglong Zhu

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EDUCATION

Carnegie Mellon University Pittsburgh, PA, USA

- Master of Science in Intelligent Information Systems (MIIS-21), expected in May 2024

Duke Kunshan University / Duke University (Dual degree) Kunshan, China

- Bachelor of Science by Duke University and Duke Kunshan University, graduated in May 2022
- Major: Data Science GPA: 3.889/4.00;

PUBLICATIONS

[1] **Tinglong Zhu**, Xiaoyi Qin, Ming Li (2021) Binary Neural Network for Speaker Verification. *Conference of the International Speech Communication (Interspeech) 2021*

[2] Xingming Wang, Xiaoyi Qin, Ming Li, **Tinglong Zhu**, Chao Wang, Shilei Zhang (2021) The DKU-CMRI System for the ASVspoof 2021 Challenge: Vocoder Based Replay Channel Response Estimation. *ASVspoof 2021 Workshop*

[3] Yao Yao, Xurui Jin, Kaixi Cao, **Tinglong Zhu**, Junfeng Zhang, Yi Zeng. (2021) Residential Proximity to Major Roadways and Cognitive Function among Chinese Adults 65 Year and Older. *Science of the Total Environment (Volume 766)*

[4] Yao Yao, Kaixi Cao, Kehan Zhang, **Tinglong Zhu**, Dahai Yue, Hao Zhang, Jim Zhang, Xurui Jin, Yi Zeng (2020) Residential Proximity to Major Roadways and Prevalent Hypertension Among Older Adults: Results from the Chinese Longitudinal Healthy Longevity Survey. *Frontiers in Cardiovascular Medicine (17th November 2020 Issue)*

INTERNSHIP EXPERIENCE

Microsoft Cloud + AI May 2021 – Aug 2021

Research Intern, Cloud + AI Speech Team (Mentor: Yan DENG, Ph.D.; Team Manager Lei HE, Ph.D.) Beijing, China

Project: Automatic Speech Recognition (ASR) Text-to-Speech (TTS) Automatic Speaker Verification (ASV) Joint Training

Conducted joint training of ASR TTS ASV models to enlarge data sources of small languages, and enhanced human-computer interaction for more languages and dialects over the world.

- Built the pipeline (Listen, Attend and Spell) for Auto Speech Recognition based on ESPnet, the pipeline for automatic speaker verification (ASV) based on SEResNet34 and the pipeline for Text-to-Speech (Tacotron2)
- Performance improvement: TTS system: Word Error Rate (WER): Reduced from 16.5% to 15.5%. Mean Cosine Distance: Improves from 0.55 to 0.73

RESEARCH EXPERIENCE

Speech and Multimodal Intelligent Information Processing (SMIIP) Lab, Duke Kunshan Jun 2019 – Aug 2022

Student Research Assistant. Mentor: Associate Professor Ming LI, Ph.D.

Project 1: Binary Neural Networks for Speaker Verification Jan 2021 – Apr 2021

Applied Binary Weight Neural Network to Automatic Speaker Verification (ASV) systems. Publication [1]

- Verified theoretically computational cost down by 50% for inferencing and training network and theoretically network downsize 32X less than the original network while keeping the acceptable performance: 5.355% EER for text-independent ASV, while 3.098% EER for text-dependent ASV

SKILLS

Python, Pytorch toolkit, ESPnet, Kaldi toolkit, C/C++, Linux, Sklearn toolkit, Keras, MATLAB, Matplotlib, TensorFlow, Data Analysis based on R, Video editing