Tingle Li

Undergraduate Student

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Education

Tiangong University *Tianjin, China*

B.Eng. in Computer Science and Technology, GPA: 3.73/4.0 (top 5%) *Sep. 2016-Jun. 2020*

- Honors Program of Artificial Intelligence (an elite program for top 10% students)
- Advisor: Prof. Ming Li (Duke University), Prof. Rize Jin (Tiangong University)

Publications

Optimal Mapping Loss: A Faster Loss for End-to-End Speaker Diarization

- Qingjian Lin*, **Tingle Li***, Lin Yang, Junjie Wang, and Ming Li.
- *In Proceedings of the Speaker Recognition Workshop.* Speaker Odyssey 2020.

Sams-Net: A Sliced Attention-based Neural Network for Music Source Separation

- **Tingle Li**, Jiawei Chen, Haowen Hou, and Ming Li.
- *21st annual conference of the International Speech Communication Association.* Interspeech 2020. (Under Review)

Atss-Net: Target Speaker Separation via Attention-based Neural Network

- **Tingle Li**, Qingjian Lin, Yuanyuan Bao, and Ming Li.
- *21st annual conference of the International Speech Communication Association.* Interspeech 2020. (Under Review)

Skills

Languages Python, Java, C++ and Shell

Frameworks PyTorch, TensorFlow, Keras and a little Kaldi

Research Interests

Source Separation, Speech Enhancement, Music Information Retrieval, Multimodal Learning

Research Experiences

Duke Kunshan University *Suzhou, China*

Research Intern, Speech and Multimodal Intelligent Information Processing (SMIIP) Lab *Jul. 2019 - Present*

- Advisor: Prof. Ming Li
- Research on speech separation, including voice separation and music separation.

Samsung Research Institute China *Beijing, China*

Research Intern, Language Intelligence Team, Speech Lab *Jan. 2020 - Mar. 2020*

- Implemented a joint speech enhancement and separation system, which was prepared for Bixby.

Tianjin Key Laboratory of Autonomous Intelligence Technology and Systems *Tianjin, China*

Student Research Assistant *Sep. 2018 - Jun. 2019*

- Advisor: Prof. Reze Jin
- Mastered Deep Learning-based method for speech processing, especially in music information retrieval
- Learned some basic knowledge about speech processing, such as Short-time Fourier transform (STFT), GMM-HMM, Fbank and MFCC, etc.

Research Projects

Target Speaker Separation via Attention-based Neural Network

- Given a referenced utterance of the target speaker, and a mixed utterance containing the target speaker, this system aims at filtering the target speaker's voice from the mixed utterance. Online samples are here.
- Tried to modify the LSTM layer with the attention mechanism, which is used to combine the target speaker embedding and the mixed spectrogram. Experimental results show that our model yields better performance than the VoiceFilter proposed by Google.

A Sliced Attention-based Neural Network for Music Source Separation

- Given a musical utterance, our goal is to recover the individual stems from the mixed signal (i.e., Vocals, Drums, Bass and Other). Online samples are here.
- Proposed a new attention mechanism called Sliced Attention, where the scope of attention is narrowed down to the intra-chunk features that are most likely to affect each other.
- Our model has achieved the state-of-the-art performance when it comes to the SDR metric, although it contained fewer parameters compared with the baselines.

Singing Voice Separation for Singer Verification

- Given a musical utterance, this task aims to identify who is singing.
- First inputing the musical utterance into the separation system to separate the vocals of it, then using the speaker verification system to identify the singer.
- This technique was used as the third party duplicate checking technique for Guinness Records of the CCTV National Day Celebration Program, and the news can be found at here.

Teaching Experience

Introduction to Machine Learning (TA), ***Fall 2019***

Selected Honors & Awards

Three years of Dean's List, ***2016-2019***
Three years of Merit Scholarship, ***2016 - 2019***
Third Prize of the "Lan-Qiao" Cup National Selection Competition, ***2016 - 2017***
First Prize of the China Students Innovation and Entrepreneurship Competition (7.9% of all), ***2018 - 2019***