

Tingle Li

RESEARCH ASSISTANT, TSINGHUA UNIVERSITY

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EDUCATION

Tsinghua University

Beijing, China

Post-bachelor at Institute for Interdisciplinary Information Sciences

Jul. 2020-Jul. 2021

- Research-oriented program during COVID-19
- **Advisor:** Prof. *Hang Zhao*

Tiangong University

Tianjin, China

B.Eng. in Computer Science and Technology

Sep. 2016 - Jun. 2020

- Honors Program of Artificial Intelligence (an elite program for top 10% students)
- **GPA:** 3.74/4.0 (Top 5%)
- **Advisor:** Prof. *Ming Li* (Duke University), Prof. *Rize Jin* (Tiangong University)
- **Selected Courses:** Machine Learning (97), Mathematical Foundation of Artificial Intelligence (98), Data Mining (91), Computer Vision (91), Numerical Analysis (94), Applied Statistics (91), Linear Algebra (93), Probability and Statistics (93), Advanced Mathematics (94), Data Structure (94), Algorithm Design and Analysis (93), High-level Programming Language (95)

RESEARCH INTERESTS

Speech Processing: Source Separation, Voice Conversion, Music Information Retrieval

Multimodal Interaction: Audio-Visual Learning, Self-Supervised Learning, Representation Learning

PUBLICATIONS

Tingle Li, Yichen Liu, Chenxu Hu, Hang Zhao. "CVC: Contrastive Learning for Non-parallel Voice Conversion". Submitted to ICASSP 2021.

Tingle Li, Jiawei Chen, Haowen Hou, Ming Li. "Sams-Net: A Sliced Attention-based Neural Network for Music Source Separation". In *Proc. ISCSLP*, Hong Kong, China, January 2021.

Qingjian Lin*, **Tingle Li***, Lin Yang, Junjie Wang, Ming Li. "Optimal Mapping Loss: A Faster Loss for End-to-End Speaker Diarization". In *Proc. Speaker Odyssey*, Tokyo, Japan, November 2020.

Tingle Li, Qingjian Lin, Yuanyuan Bao, Ming Li. "Atss-Net: Target Speaker Separation via Attention-based Neural Network". In *Proc. INTERSPEECH*, Shanghai, China, October 2020.

Qingjian Lin, **Tingle Li**, Ming Li. "The DKU Speech Activity Detection and Speaker Identification Systems for Fearless Steps Challenge Phase-02". In *Proc. INTERSPEECH*, Shanghai, China, October 2020.

AWARDS & ACHIEVEMENTS

Best Undergraduate Dissertation (**top 1%**)

Jun. 2020

Merit Scholarship for Outstanding Students (**top 5%**)

Dec. 2017, 2018, 2019

1st for SID and 3rd for SAD among 50 teams, Fearless Steps Challenge Phase-02

May. 2020

1st Prize, China Students Innovation and Entrepreneurship Competition

May. 2019

3rd Prize, Lan Qiao Cup National Selection Competition

May. 2017

TECHNICAL SKILLS

Programming Languages: Python, Java, C/C++, Shell, HTML/CSS, and MATLAB

Tools and Frameworks: Git, L^AT_EX, PyTorch, TensorFlow, Keras, OpenCV, and Kaldi

RESEARCH
EXPERIENCE

Institute for Interdisciplinary Information Sciences

Advisor : Prof. *Hang Zhao*

Tsinghua University

Jul. 2020 - Present

CVC: Contrastive Learning for Non-parallel Voice Conversion

- Given two corpora from two speakers, this task aims to convert one's voice to the others.
- Exploring a voice conversion model based on noise contrastive estimation (NCE) loss, which enables one-sided conversion in the non-parallel voice conversion setting, while improving speech quality and reducing training time.

Language Intelligence Team, Speech Lab

Advisor : Prof. *Ming Li*

Samsung Research Institute Beijing

Jan. 2020 - Mar. 2020

Research on Joint Speech Enhancement and Separation System

- Implemented a simultaneous speech enhancement and separation system, which explores the feasibility of using it in [Bixby](#).

Speech and Multimodal Intelligent Information Processing Lab

Duke Kunshan University

Advisor : Prof. *Ming Li*

Jul. 2019 - Jul. 2020

Atss-Net: 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 task aims at filtering the target speaker's voice from the mixed utterance.
- Proposed a target speaker separation model based on attention neural network, which leveraged the attention mechanism to fuse the mixed spectrogram and the target speaker embedding.
- Collaborated with Xiaomi Corporation to land in application, where demos are available [here](#).

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

- Given a musical utterance, our goal is to recover the individual stems from the music signal (i.e. vocals, drums, bass and others).
- 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, although it contained fewer parameters compared with baselines, where demos are available [here](#).

Research on Singing Voice Separation for Singer Verification

- Given a musical utterance, this task aims to identify who is singing.
- Designed a paradigm that input the musical utterance into the separation system to separate the vocals of it, then used the speaker verification system to identify the singer.
- Adopted as the third party duplicate checking technique for Guinness Records of the CCTV National Day Celebration Program, where the press coverage can be found [here](#) (in Chinese).

Key Laboratory of Autonomous Intelligence Technology and Systems

Tiangong University

Advisor : Prof. *Rize Jin*

Sep. 2018 - Jun. 2019

Research on Deep Learning-based Music Information Retrieval

- Mastered basic knowledge about audio processing, such as short-time fourier transform (STFT), pitch, filter-bank and MFCC, etc.
 - Explored methods of improving the performance of singing voice separation model via Transformer.
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