

# TING-LE LI

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Homepage: <https://tinglok.netlify.com>

## EDUCATION

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**Tianjin Polytechnic University**

BEng in Computer Science (Elite Class of Artificial Intelligence)

GPA: 3.71/4.00 (Top 10% of the major)

**Tianjin, China**

Sep. 2016 - Present

## HONORS & AWARDS

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Three years of Merit Scholarship, 2016 - 2019

Third Prize of the Blue Bridge Cup Team Competition National Selection Competition, 2016 - 2017

First Prize of the School-level Innovation and Entrepreneurship Challenge Competition, 2016 - 2017

First Prize of the China Students Service Outsourcing Innovation and Entrepreneurship Competition, 2018 - 2019

## PUBLICATIONS

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[1] Tingle Li, Jiawei Chen, Haowen Hou and Ming Li. "TF-Attention-Net: An End To End Neural Network For Singing Voice Separation." arXiv preprint arXiv:1909.05746 (2019).

## CORE COURSES

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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

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Source Separation, Speaker Recognition, Music Information Retrieval, One-shot Voice Conversion

## WORK EXPERIENCES

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**Speech and Multimodal Intelligent Information Processing (SMIIP) Lab**

**Suzhou**

Research Intern

Jul. 2019 - Present

- Advised by Prof. **Ming Li**, I do some research on the utterance-level speaker and language recognition based on the deep neural network;
- Trying to provide front-end techniques like Speech separation for far-field Speech Recognition, Speaker Verification and Speaker Diarization tasks.

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

**Tianjin**

Student Research Assistant

Sep. 2018 - Jun. 2019

- Advised by Prof. **Rize Jin** and Dr. **Weitao Yuan**, I mastered how to apply Deep Learning to Speech Processing, especially in Music Information Retrieval;
- Tried to use the Attention-based U-Net for Singing Voice Separation task and found it has a slight improvement compared with the baselines, which gave me an in-depth interest in the effects of Attention Mechanism in the Source Separation task.

## RESEARCH PROJECTS

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### Target Speaker Separation for Overlap Detection

Suzhou

Research Assistant

Oct. 2019 - Present

- Speaker Diarization System distinguishes speakers well only when the audio is non-overlapping. I am trying to study a system to separate the target speaker's audio from the mixed audio, that is, given two input to the system: a speaker embedding vector from the target speaker's enrollment audio and the spectrogram of the mixed audio, then separate the target speaker's audio from the mixed audio;
- Previous research is to expand the frame level of the speaker embedding vector, then input it to an LSTM layer together with the mixed spectrogram, but it is very inefficient due to the time dependence of LSTM. So using a self-attention to replace the LSTM layer might be a better option.

### Singing Voice Separation for Speaker Verification

Shanghai

Research Assistant

Sep. 2019 - Oct. 2019

- We used the network structure we proposed to separate vocals of music for Speaker Recognition system, so that when different people sing the same song at the same time, the number of singers can be roughly identified (about 95% Accuracy);
- This technique has been adopted by Tencent Inc., which will be used as the third party duplicate checking technology for Guinness Records of the CCTV National Day Celebration Program, and news can be seen in [here](#).

### TF-Attention-Net: An Neural Network for Singing Voice Separation

Suzhou

Research Assistant

Jan. 2019 - Oct. 2019

- Working with the researcher from Tencent Inc., we proposed an end-to-end neural network based on self-attention, which focuses on the singing voice separation task. It works on spectrogram domain, which can separate songs into accompaniments and vocals;
- Compared with the baselines, the Median and Mean of the SDR metric of our model are greatly improved while the number of model parameters is significantly reduced. It have been submitted to ICASSP 2020 (as the first author) and now can be seen in [arXiv](#), where samples can listen in [here](#).

### China Students Service Outsourcing Innovation and Entrepreneurship Competition Wuxi

Team Member

Nov. 2018 - May. 2019

- We develop a project called Deep-Learning-Based Psychological Measurement System for College Students, and our team won the national first prize (less than 8%) in Baidu Inc. Proposition Competition;
- We built the system using TensorFlow, which use VGG-19 to identify facial expression and building a chatbot system using LSTM and Self-Attention Mechanism, finally the pre-trained model was deployed into our web system.

## TECHNICAL STRENGTHS

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Programing Language

Python, Java, Shell, C++

Programing Framework

TensorFlow, PyTorch, Keras and a little Kaldi

GitHub

<https://github.com/Tinglok>