

# ZEYU ZHAO

Informatics Forum, Chapel Street, Edinburgh, EH8 9AB, Scotland  
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## EDUCATION

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### University of Edinburgh

*September 2020 - Present*

PhD Student

Centre for Speech Technology Research

School of Informatics

### Tsinghua University

*September 2017 - August 2020*

M.S. in Information and Communication Engineering

Department of Electronic Engineering

CGPA: 3.6/4.0

### Lady Margaret Hall, University of Oxford

*August 2019*

Summer Programme, Science Research at the Cutting Edge

Successfully completed with distinction

### Beijing Institute of Technology

*September 2013 - June 2017*

B.S. in Electronic Information Engineering

Department of Electronic Engineering

CGPA: 90/100

## PUBLICATIONS

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### Conferences

**Z. Zhao** and P. Bell, "Softmax CTC: Encouraging Path Sparsity for Improved Decoding Efficiency" SLT 2022 (under review)

**Z. Zhao** and P. Bell, "Investigating Sequence-Level Normalisation For CTC-Like End-to-End ASR," ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2022, pp. 7792-7796

**Z. Zhao** and W. Q. Zhang (2020). End-to-End Keyword Search Based on Attention and Energy Scorer for Low Resource Languages. In INTERSPEECH (pp. 2587-2591).

**Z. Zhao**, W. Q. Zhang, J. Liu, F. Zhang, X. Li, and L. Yu, (2020, December). Jujubecake: An Extension of LSTM Considering Correlation among Input Blocks. In 2020 15th IEEE International Conference on Signal Processing (ICSP) (Vol. 1, pp. 316-320). IEEE.

### Journals

**Z. Zhao** and W. Q. Zhang. (2021). End-to-end keyword search system based on attention mechanism and energy scorer for low resource languages. Neural Networks, 139, 326-334.

**Zhao Zeyu**, Zhang Weiqiang, and Liu Jia, "End-to-End Keyword Search System Based on Attention Mechanism and Multitask Learning," (in Chinese) Journal of Signal Processing, 2020, 36(6):839-851. DOI: 10.16798/j.issn. 10030530. Jun 2020.

## EXPERIENCE

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**PhD Research at CSTR**  
Supervised by Dr. Peter Bell  
Focusing on End-to-End Automatic Speech Recognition

*September 2020 - Present*

**Automatic Speech Recognition (ASR) 2021-22**  
Teaching assistant and demonstrator

*January 2022 - June 2022*

**Master Research at Tsinghua University**  
Master Student, Department of Electronic Engineering  
Supervised by Dr. Wei-Qiang Zhang  
Automatic Speech Recognition (ASR), Keyword Search (KWS) and Sequence Modelling  
Mainly focused on end-to-end ASR and KWS for low resource languages

*September 2017 - August 2020*

**OpenSAT19 Competition**  
**Core Member**

*April 2019 - August 2019*

Introduction: OpenSAT19 hosted by NIST is a competition which consists of three parts, including ASR, KWS and SAD (Speech Activity Detection). Each part contains 3 tasks so there are tasks in total. We attended 5 tasks, three in SAD, one in KWS and one in ASR.

Contribution: I was a core member of our team and developed KWS systems for Pashto language, a low resource language.

Result: We won two 1st prizes, two 2nd prizes and one 3rd prize. Particularly, we won the 2nd prize in KWS task, where I was the main contributor.

## SKILLS

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Python, PyTorch, ESPnet, Kaldi, C, L<sup>A</sup>T<sub>E</sub>X, TensorFlow, Keras

## LANGUAGES

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**Mandarin**  
Native speaker

**English**  
Working proficiency

## AWARDS & SCHOLARSHIPS

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**Student Research Award** *2019*  
Research Center for Media Big Data Cognitive Computing, Department of Electronic Engineering  
Tsinghua University, Beijing, China

**National Scholarship** *2014 - 2016*  
Beijing Institute of Technology, Beijing, China  
For top students only

**First Undergraduate Scholarship** *2013 - 2017*  
Beijing Institute of Technology, Beijing, China  
For top students only

**Third Prize, Beijing Electronic Design Competition** *2016*

**Honorable Mentioned, Mathematical Contest in Modelling** *2015*

## ACTIVITY

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**Escort**

*September 2013 - June 2015*

**Member**

Voluntary teaching for students of year 5 in Minren Primary School, Fangshan District, Beijing

Held a Christmas party in Beijing Institute of Technology in Fangshan District for the children in Minren Primary School.

**Singing competition of the school of information and electronics**

*December 2013*

Beijing Institute of Technology

Entered the final competition.

**Student Union of School of Information and Electronics**

*September 2014 - June 2015*

**Core member and the minister of study and research**

Beijing Institute of Technology