

# ZEYU ZHAO

[Google Scholar](#) [LinkedIn](#) [Personal Website](#)

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## RESEARCH INTERESTS

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Generative AI, End-to-End (E2E) Automatic Speech Recognition (ASR), Text-to-Speech (TTS), Large Language Models (LLMs)

## SKILLS

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- Languages, Libraries, & Tools: Python, C++, Shell, PyTorch, k2, Git
- Machine Learning: Transformer, CTC, Seq2Seq, Generative AI
- Research: ASR, LLM Fine-tuning
- Software Engineering: Open-source Development, Modular Framework Design

## EDUCATION

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### University of Edinburgh

*September 2020 - July 2025*

PhD Student, supervised by [Prof Peter Bell](#)

End-to-End Speech Recognition

[Centre for Speech Technology Research](#)

[School of Informatics](#)

### Tsinghua University

*September 2017 - August 2020*

Master of Science, supervised by [Dr Wei-Qiang Zhang](#)

End-to-End Keyword Search and Speech Recognition for Low Resource Languages

[Speech and Audio Technology Lab](#)

Department of Electronic Engineering

CGPA: 3.6/4.0

### Beijing Institute of Technology

*September 2013 - June 2017*

Bachelor of Science

Department of Electronic Engineering

CGPA: 90/100

## EXPERIENCE

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### Research Officer (postdoc)

*September 2024 - Present*

Generative and Interactive AI

School of Mathematics and Computer Science, Swansea University

### Research Associate

*March 2024 - August 2024*

Fine-tuning and evaluating Large Language Models (LLMs) for finance application

Main contributor and code writer (part-time)

University of Edinburgh

### Teaching Assistant and Demonstrator

*January 2022 - June 2024*

Automatic Speech Recognition (ASR) by Prof Peter Bell

University of Edinburgh

### Marker

*September 2022 - January 2023*

## OPEN-SOURCE CONTRIBUTION

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### SpeechBrain k2 integration

Contributor

A popular open-source speech processing toolkit on [Github](#)

Contributed to integration of k2-based training and decoding into SpeechBrain's ASR pipeline.

### Ben Nevis

An End-to-End ASR framework based on PyTorch and [k2](#), a Differentiable Weighted Finite-State Transducer library

Creator

Please see my personal [Github](#) for more information.

## SELECTED PUBLICATIONS

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For the full list, please see my [Google Scholar](#).

**Z. Zhao** and P. Bell, *Regarding the Existence of the Internal Language Model in CTC-Based E2E ASR*, ICASSP 2025

**Z. Zhao** and P. Bell, *Advancing CTC Models for Better Speech Alignment: A Topological Approach*, SLT 2024

**Z. Zhao**, P. Chen and P. Bell, *Regarding Topology and Adaptability in Differentiable WFST-Based E2E ASR*, ICASSP 2024 XAI-SA Workshop

**Z. Zhao**, P. Bell and O. Klejch, *Exploring Dominant Paths in CTC-Like ASR Models: Unraveling the Effectiveness of Viterbi Decoding*, ICASSP 2024 XAI-SA Workshop

**Z. Zhao** and P. Bell, *Regarding Topology and Variant Frame Rates for Differentiable WFST-based End-to-End ASR*, Interspeech 2023

Y. Li<sup>†</sup>, **Z. Zhao**<sup>†</sup>, O. Klejch, P. Bell, and C. Lai, *A Word-Level Investigation of the Mutual Impact of Speech and Emotion Recognition*, Interspeech 2023

**Z. Zhao** and P. Bell, *Investigating Sequence-Level Normalisation For CTC-Like End-to-End ASR*, ICASSP 2022

**Z. Zhao** and W. Q. Zhang, *End-to-End Keyword Search Based on Attention and Energy Scorer for Low Resource Languages*, Interspeech 2020

**Z. Zhao** and W. Q. Zhang, *End-to-End Keyword Search System Based on Attention Mechanism and Energy Scorer for Low Resource Languages*, Neural Networks, 2021

## AWARDS & SCHOLARSHIPS

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<sup>†</sup>Equal contribution.

**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***First Prize in National Physics Competition***2014*