Fuzhao XUE

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EDUCATION

Doctor of Philosophy (Ph.D.) Jul. 2025 (expected)

National University of Singapore Singapore

- Majored in Computer Science
- President's Graduate Fellowship
- Published paper at AAAI 2022
- Published two papers at ICASSP 2022
- Published paper at CVPR 2022
- Submitted one paper at IJCAI 2022
- Submitted one paper at KDD 2022
- Submitted two papers at ICML 2022

Master of Engineering (M.Eng.) Jul. 2021

Nanyang Technological University Singapore

- Majored in Computer Science and Engineering
- Thesis: Refining latent multi-view graph for relation extraction
- GPA: 5.0/5.0
- Published paper at AAAI 2021
- Published paper at ICML 2020

PROFESSIONAL EXPERIENCE

National University of Singapore | Singapore   *Ph.D. Student* Jul. 2021-Present

In charge of efficient and effective general training framework for both computer vision and natural language processing to scale transformer. Published at AAAI 2022. Submitted at IJCAI 2022, ICML 2022.

- Proposed to go wider instead of deeper, compressing along depth by parameter sharing and scaling along width by mixture-of-experts to construct a parameter-efficient framework.
- Proposed knowledge integration to integrate knowledge from pretrained MoE into dense student for a dense model, which is efficient and hardware-friendly as other dense model but is as effective as MoE counterpart.
- Proposed sequence parallelism to train transformer with longer sequence from system perspective.

Nanyang Technological University | Singapore   *M.Eng. Student* Jul. 2020-Jun. 2021

In charge of design of improving dialogue-level relation extraction by adaptive graph pooling proposed. Published paper at AAAI 2021

- Identified indictive words using Dynamic Time Wrapping Pooling in an unsupervised manner with high accuracy.
- Improved the state-of-the-art of dialogue-level relation extraction by 6% on DialogRE.

National University of Singapore | Singapore   *Research Intern* Oct. 2019-Apr. 2020

In charge of design of hybrid speech recognition framework with utilization of Pytorch and Kaldi. Published paper at ICML 2020

- Used Pytorch underlying operations to implement acoustic models such as DNN, LSTM, SRU, RRN and RTN.
- Modeled relational thinking through Deep Graph Process, reducing WER by 10% relatively on Chime2, Chime5 and SWBD.

National University of Singapore Summer Workshop | Singapore Jul. 2018-Aug. 2018

*Designed fire-fighting trolley with automatic driving, speaker recognition, target detection, image classification, automatic obstacle avoidance, semi-automatic driving with manual driving, voice control, and fully automatic driving. **Grade: A***

- Solved problem of image uploading speed of trolley through MQTT protocol being way faster than model recognizing speed, and significantly reduced latency from 9s to 2s.
- Preprocessed all audio data with sox as well as modeled first 0.25s of each channel voice and uniformed sampling rate, improved speech recognition and voiceprint recognition and audio data quality.

SKILLS

- **Programming:** Python, C/C++, C#, Matlab
- **Frameworks:** TensorFlow, PyTorch, Keras, Theano, Scikit-learn, pandas, OpenCV

PUBLICATIONS

- **Fuzhao Xue**, Ziji Shi, Futao Wei, Yong Liu, Yang You "*Go Wider Instead of Deeper*" Published at Association for the Advancement of Artificial Intelligence **(AAAI) 2022**

- **Fuzhao Xue**, Aixin Sun, Hao Zhang, Eng-Siong Chng "*An Embarrassingly Simple Model for Dialogue Relation Extraction*" Published at International Conference on Acoustics, Speech, & Signal Processing **(ICASSP) 2022**

- Andrew Koh, **Fuzhao Xue**, Eng Siong Chng *"Automated Audio Captioning using Transfer Learning and Reconstruction Latent Space Similarity Regularization"* Published at International Conference on Acoustics, Speech, & Signal Processing **(ICASSP) 2022**

- **Fuzhao Xue**, Aixin Sun, Hao Zhang, Eng-Siong Chng "*GDPNet: Refining Refining Latent Multi-View Graph for Relation Extraction*" Published at Association for the Advancement of Artificial Intelligence **(AAAI) 2021**

- Hengguan Huang, **Fuzhao Xue**, Hao Wang, Ye Wang * "*Deep Graph Random Process for Relational-Thinking-Based Speech Recognition*" Published at International Conference on Machine Learning (**ICML**) **2020**

- Xingmei Wang, Jiaxiang Meng, Bin Wen, **Fuzhao Xue** *"RACP: A network with Attention Corrected Prototype for Few-shot Speaker Recognition using Indefinite Distance Metric"* Published at **Neurocomputing**

- Xingmei Wang, **Fuzhao Xue**, Wei Wang, Anhua Liu.*"A network model of speaker identification with new feature extraction methods and asymmetric BLSTM"* Published at **Neurocomputing**

- Xingmei Wang, Anhua Liu, Yu Zhang, **Fuzhao Xue**.*"An Underwater Acoustic Target Recognition: A Combination of Multi-dimensional Fusion Features and Modified Deep Neural Network"* Published at **Remote Sensing**.

PREPRINTS

   * denote equal contribution.

- **Fuzhao Xue**, Xiaoxin He, Xiaozhe Ren, Yuxuan Lou, Yang You "*One Student Knows All Experts Know: From Sparse to Dense*" *arXiv preprint* **arXiv:2201.10890**

- Shenggui Li*****, **Fuzhao Xue***, Yongbin Li, Yang You "*Sequence Parallelism: Long Sequence Training from System Perspective*" arXiv preprint **arXiv: 2105.13120**

- Yuxuan Lou, **Fuzhao Xue**, Zangwei Zheng, Yang Yo*u "Cross-token Modeling with Conditional Computation" arXiv preprint* **arXiv:2109.02008**

- Xiaoxin He, **Fuzhao Xue**, Xiaozhe Ren, Yang You *"Large-Scale Deep Learning Optimizations: A Comprehensive Survey"* arXiv preprint **arXiv:2111.00856**

- Jinjie Ni, Tom Young, Vlad Pandelea, **Fuzhao Xue**, Vinay Adiga, Erik Cambria "*Recent Advances in Deep Learning-based Dialogue Systems*" *arXiv preprint* **arXiv: 2105.04387**