

Zhiyuan Zeng

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Email: zhiyuan.zeng@tju.edu.cn

Research interests

Machine Translation, Robustness, Structured Prediction

Education

Tianjin University

Tianjin, China

MA in Computer Science

2020 – Present

Mentors: Professor Deyi Xiong

Nanchang University

Nanchang, China

BA in Computer Science

2016 – 2020

Publications

SCoMoE: Efficient Mixture of Experts with Structured Communication

Zhiyuan Zeng, Deyi Xiong

The Eleventh International Conference on Learning Representations (ICLR), Anonymous Submission, 2023, [[pdf](#)]

An Empirical Study on Adversarial Attack on NMT: Languages and Positions Matter

Zhiyuan Zeng, Deyi Xiong

Association for Computational Linguistics (ACL), 2021, [[pdf](#)]

Unsupervised and Few-Shot Parsing from Pretrained Language Models

Zhiyuan Zeng, Deyi Xiong

The journal of Artificial Intelligence (AIJ), Volume 305, April, 2022 [[pdf](#)]

Research experience

Efficient Communication for Mixture of Experts

Mentors: Professor Deyi Xiong

June 2021 – May 2022

- Proposed an efficient MoE model (SCoMoE) with structured all-to-all communication based on the hierarchical structure of communication topology.
- Proposed the token clustering and differentiable sorting to compensate the potential performance drop caused by structured communication.
- Speedup the baseline (Gshard) to 1.5x with the comparable translation performance and to 1.3x with significantly better performance (1.2 BLEU) on massive bilingual and multilingual translation.

Empirical Study on Adversarial Attack on NMT

Mentors: Professor Deyi Xiong

July 2020 – January 2021

- Empirically found that adversarial attack on the source side is more effective than that on the target side in terms of the performance degradation of NMT models under attack.
- Empirically found that adversarial attacks on front positions are more effective than those on back positions due to the autoregressive translation.
- Propose a new adversarial attack generation approach that samples positions for injecting perturbations according to the attention distribution.

Unsupervised and Few-Shot Parsing from Pretrained Language Models

Mentors: Professor Deyi Xiong

December 2019 – December 2020

- Proposed unsupervised and few-shot parsing models solely based on the self-attention weight matrix in pretrained language models.
- Achieved the state-of-the-art results on most languages in SPMRL in both unsupervised and few-shot parsing.

Industry experience

Global Tone Communication TECHNOLOGY CO., LT Beijing, China

Massive multilingual NMT

June 2021 - Present

Training a massive multilingual NMT model with 40 billion parameters on a massive multilingual parallel corpus with 1 billion samples.

OPPO

Beijing, China

Robustness of NMT

July 2020 - May 2021

Empirical study on the adversarial attack on NMT.

Skills

Library

Familiar with: Pytorch and Fairseq

Tools

Familiar with: Slurm