ZHEN ZHANG

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EDUCATION

Tsinghua University   Beijing, China
Bachelor of Science in Mathematics and Physics   Sept 2019 – Expected July 2023

- **Honors & Awards:** Silver Medal in the 35th Chinese Physics Olympiad, Academic Excellence Award (2021-2022)
- **Relevant Courses:** Foundation of Object-Oriented Programming, Data Structures, Discrete Mathematics, Theory of Computer Network, Artificial Neural Networks

PUBLICATIONS

Sparse Structure Search for Delta Tuning (NeurIPS 2022)

Shengding Hu*, **Zhen Zhang***, Ning Ding, Yadao Wang, Yasheng Wang, Zhiyuan Liu, Maosong Sun
(* indicates equal contribution)

RESEARCH EXPERIENCE

University of California, Santa Cruz   Online
Summer Internship with Professor Xin Eric Wang   Jul 2022 – Present
Eric Lab

- Addressed the multilingual disparity of vision and language foundation models such as CLIP.
- Proposed a unified framework by translation and taking advantage of parallel data. Methods for mapping multilingual texts to the same language space and aligning them improve multilingual disparity.
- Preparing the manuscript for submission to ACL 2023

Tsinghua University   Beijing, China
Research Assistant to Professor Zhiyuan Liu   Jan 2022 – Present
THUNLP

- Participated in developing a toolkit called OpenDelta, an open-source framework for parameter-efficient tuning.
- By using this toolkit, users could easily implement various types of parameter-efficient tuning with preferred pre-trained models.
- Tested and adapted more Transformer-based models to OpenDelta.

Tsinghua University   Beijing, China
Research Assistant to Professor Zhiyuan Liu   Jan 2022 – May 2022
THUNLP

- Presented a method that automatically Search for the Sparse Structure of Delta Tuning (S^3Delta).
- S^3Delta conducts the differentiable parameter-efficient tuning (PET) structure search through bi-level optimization, and uses Shifted Global Sigmoid method to explicitly control the number of trainable parameters and optimize the combination of various current PET methods.
- S^3Delta preserves more than 99% of fine-tuning performance with 0.01% trainable parameters.
- This work has been accepted by NeurIPS 2022.

Tsinghua University   Beijing, China
Research Assistant to Professor Zhiyuan Liu   May 2021 – Jan 2022
THUNLP

- Explored the performance of the pre-trained model (BERT, T5) in keyword extraction.
- Studied the inferential capability and reasoning depth of the pre-trained model as a soft reasoner on closed-world reasoning tasks.
- Utilized model distillation to accelerate the training process of Soft Prompt.

SELECTED COURSE PROJECTS

Paper Reproduction

- Course project for course Artificial Neural Networks.
- This repository provides a reproduction based on the framework Jittor for the paper 'Table-to-text Generation by Structure-aware Seq2seq Learning' selected in AAAI2018.

Slow Electron Velocity Imaging

- Course project for course Big Data in Experimental Physics taught by Benda Xu.
- Trained ResNet34 from scratch to accurately reconstructs the coefficients of the Lejeune equation in the electron velocity field.

EXTRACURRICULARS

Small Animal Protection Association, Tsinghua University　　　　　　　　Beijing, China
Volunteer & Member　　　　　　　　　　　　　　　　　　　　　　　Oct 2020-Oct 2021

- Rescued stray animals, reviewed the qualifications for applying for pet adoption, and assisted in the work of the stray animal shelter.