ZHEN ZHANG

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EDUCATION

Tsinghua University — Beijing, China
BS in Mathematics and Physics — Sep 2019 – Jul 2023 (expected)

- Selected awards:
  - Silver Medal in the 35th Chinese Physics Olympiad
  - Academic Excellence Award in 2021-2022
- Selected Courses:
  - Foundation of Object-Oriented Programming, Data Structures, Discrete Mathematics, Theory of Computer Network, Artificial Neural Networks

PUBLICATION

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 – Now
Eric Lab

- Addressed the multilingual disparity of vision and language foundation models such as CLIP.
- Compared multiple parameter-efficient methods for multilingual CLIP on image-text retrieval tasks. Found translating target language to English and using English prompt significantly improve the performance. Then proposed translation guidance utilizing the parallel corpus.

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

- Participated in developing a toolkit named OpenDelta, an open-source framework for paramter-efficient tuning.
- By using this toolkit, users could easily implement various types of paramter-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 – Mar 2022
THUNLP

- Presented a method which automatically Search for the Sparse Structure of Parameter-Efficient Tuning (S^3PET).
- S^3PET conducts the differentiable PET structure search through bi-level optimization, proposes Shifted Global Sigmoid method to explicitly control the number of trainable parameters and optimize the combination of various current PET methods.
- S^3PET preserves more than 99% 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

- Learned knowledge, read papers and explored research interests.
- 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 PROJECT

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.

EXTRACURRICULAR EXPERIENCES

Small Animal Protection Association, Tsinghua University Beijing, China

Volunteer & Member Oct 2020-Oct 2021

- Rescued stray animals, reviewed the application qualification of animal adoption, and assisted in the work of stray animal shelter center.