

Zhuochun Li

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Education

University of Pittsburgh

Ph.D. in Information Science

Master of Science in Information Science, GPA: 3.9/4.0

School of Computing and Information (SCI)

Pittsburgh, USA

Sep 2023 – Present

Jan 2021 – Dec 2022

Xi'an University of Technology

Bachelor of Engineering in Computer Science

Sep 2016 – Jul 2020

Xi'an, China

Research Interests

My research interests include Natural Language Processing (NLP) and Machine Learning.

Publications

Li, Zhuochun, Yuelu Ji, Rui Meng, Daqing He. Enhance Reasoning by Learning from Mistakes: Peer-Review Knowledge Distillation from Multiple Large Language Models. Arxiv 2024 (targeting NAACL 2025)

Ji, Yuelu, **Zhuochun Li**, Rui Meng, Daqing He. ReasonTeach: Teaching Student Models to Rank through Reasoning-Based Knowledge Distillation. Arxiv 2024 (targeting NAACL 2025)

Ji, Yuelu, **Zhuochun Li**, Sonish Sivarajkumar, Hang Zhang, Yanshan Wang. BiasGuard: A Unified Framework for Addressing Fairness in Large Language Models for Clinical Trial Matching and Medical Question Answering. Arxiv 2024 (targeting NAACL 2025)

Ji, Yuelu, **Zhuochun Li**, Rui Meng, Sonish Sivarajkumar, Yanshan Wang, Zeshui Yu, Hui Ji, Yushui Han, Hanyu Zeng, and Daqing He. "RAG-RLRC-LaySum at BioLaySumm: Integrating Retrieval-Augmented Generation and Readability Control for Layman Summarization of Biomedical Texts." In *Proceedings of the 23rd Workshop on Biomedical Natural Language Processing*, pp. 810–817, Bangkok, Thailand. Association for Computational Linguistics (ACL), 2024

Li, Zhuochun, Bo Xie, Robin Hilsabeck, Alyssa Aguirre, Ning Zou, Zhimeng Luo, and Daqing He. "Effects of Different Prompts on the Quality of GPT-4 Responses to Dementia Care Questions." In *2024 12th IEEE International Conference on Health Informatics (ICHI)*. IEEE, 2024.

Li, Zhuochun, Khushboo Thaker, and Daqing He. "SiaKey: A Method for Improving Few-shot Learning with Clinical Domain Information." In *2023 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, pp. 1–4. IEEE, 2023.

Luo, Zhimeng, Yuelu Ji, Abhibha Gupta, Li, **Zhuochun Li**, Adam Frisch, and Daqing He. "Towards Accurate and Clinically Meaningful Summarization of Electronic Health Record Notes: A Guided Approach." In *2023 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, pp. 1–5. IEEE, 2023.

Li, Zhuochun, Wang, Zhixiao, Wenyao Yan, Min Huang, Qinyuan Fan, and Xin Wang. "Domestic Violence Crisis Recognition Method based on Bi-LSTM+ Attention." In *2022 8th Annual International Conference on Network and Information Systems for Computers (ICNISC)*, pp. 569–575. IEEE, 2022.

Academic Experience

PhD Preliminary Exam Project, University of Pittsburgh

Mar 2024 – Sep 2024

Enhance the reasoning ability of student LM via knowledge distillation from multiple LLMs. Pittsburgh, U.S.

- Introduced a novel Mistake-Aware Peer Distillation (MAPD) approach that enables student LLM to better acquire reasoning skills from multiple teacher LLMs Chatgpt, Gemini, and Mistral.
- Helped student LM learn not only from the gold-standard rationale but also from feedback on their own mistakes via instruction tuning through a simulated peer-review process between teacher LLMs.
- Demonstrated the effectiveness of our method across comprehensive experiments and analysis on mathematical(GSM8K, SVAMP), commonsense(StrategyQA), and logical(LogiQA) reasoning tasks.

Research Assistant, iRiS Lab at University of Pittsburgh

May 2022 – May 2023

Supervised by Director Daqing He and collaborated with Ph.D. students.

Pittsburgh, U.S.

- Conducted the project of Ovarian Cancer Forum, which cooperated with the School of Nursing.
- Studied few-shot learning methods in the application of text classification and recommendation systems.
- Achieved average accuracy of over 60% by 10-shot training on Siamese Networks via triple loss function, which is comparable to base Bert performance on this task.

Computer Vision - 16-720A, Carnegie Mellon University

Jan 2022 - Apr 2022

Completed the Computer Vision course with grade A taught by Professor David Held of CMU Pittsburgh, U.S.

- Learned technologies about Spatial Pyramid Matching, Planar Homographies and Lucas-Kanade Tracking.
- Contributed to tasks about 3D Reconstruction, Neural Networks for Recognition and Photometric Stereo.
- Comprehended the cutting-edge deep learning models such as GAN, VAE and Transformers.

Undergraduate Thesis Project

Jan 2020 - Jul 2020

Implementation of Domestic Violence Crisis Recognition Method Based on Deep Learning Xi'an, China

- Related paper has been published in the 2022 8th Annual International Conference on Network and Information Systems for Computers (ICNISC).
- Collected 1654 posts related to Domestic violence and built 50-dimensional word vectors via Word2Vec.
- Constructed CNN, RNN, LSTM, Bi-LSTM+self-Attention neural network models to accomplish text categorization task, Bi-LSTM+self-Attention model had the best performance, with an accuracy rate of 90.22% and recall rate of 93.98%.

Researcher, Intelligent Chat Bot Design

Jul 2019 - Aug 2019

Research supervised by instructor Fan Zhang from Massachusetts Institute of Technology Remote

- Trained text dataset containing over 1000 sentences and achieved accuracy rate of 80% utilizing rasa_nlu.
- Interpreted intentions from user stock queries and supported over 100 daily dialogue occasions by spaCy.
- Integrated the bot on WeChat and enabled users to acquire expected stock information within 1.5 seconds.

Work Experience

Machine Learning Engineer Intern, MEDA AI

May 2022 - Aug 2022

Internship with Half Moon Tech to work on the Meda Metaverse project. Remote, U.S.

- Improved the text to speech (TTS) model based on Tacotron and built server to train model over 10M steps.
- Assisted in constructing 3D character model and got average accuracy over 85% on facial attributes classification task on dataset CelebA.
- Developed API for integrating with backend services and maintained Linux servers.

Software Engineering Intern, Pactera Technology

May 2021 - Aug 2021

Design and Development of Intelligent Customer Service System Wuhan, China

- Conducted field surveys over 100 customers, assisted designing database E-R model containing 34 tables.
- Contributed more than 20 web page interface implementations for different service requirements of clients.
- Developed online semantic analysis system using Baidu voice recognition API with 80% code coverage.

Skills

Programming Language/Platform: Python (main), C, C++, JAVA, SQL, Linux, GIT, AWS, Matlab.

Tools: Anaconda, Pytorch, Huggingface, Keras, Numpy, Pandas, Scikit-learn, Spacy, NLTK, Rasa_nlu, Word2Vec.

Teaching

Fall 2024: TA for INFSCI 0201 Intermediate Programming Python (LAB LEADER)

Fall 2024: TA for INFSCI 0410 Human Centered Systems

Spring 2024: TA for INFSCI 2440 Artificial Intelligence

Fall 2023: TA for INFSCI 2140 Information Storage & Retrieval

Fall 2023: TA for INFSCI 2410 Intro to Neural Networks

Awards

Outstanding Undergraduate Thesis Award (2020)

Third Prize Scholarship for Excellent in Academic Performance (2018)