Zelong Li

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EDUCATION

Department of Computer Science, Rutgers University – New Brunswick Anticipated May 2024

- PhD Candidate, GPA: 4.00/4.00

Department of Computer Science and Technology (CST), Tsinghua University Jul 2019

B.E. in Computer Science and Technology

- Major GPA: 3.73/4.00

WORK EXPERIENCES

Product Semantics Team, Amazon P13N, Amazon, Seattle, WA May 2023 – Aug 2023

Applied Scientist Intern

Large Language Model (LLM) for Coherent and Explainable Complement Recommendation

- Defined and proposed the concept and criteria of coherent complement recommendation products.
- Used few-shot learning on off-the-shelf LLM and regex matching to build coherent complement datasets.
- Design an LLM-compatible item indexing algorithm for LLM to use text features and user behavior information.
- Fine-tuned LLM on downstream datasets with multiple tasks, outperforming baselines on this problem.

Product Semantics Team, Amazon P13N, Amazon, Seattle, WA May 2022 – Aug 2022

Applied Scientist Intern

Shopping Objective Detection and Inference

- Defined the concept and problem of shopping objectives through search log and category name at Amazon.
- Designed crowdsourcing task on MTurk to gather real-world users' feedback on objective detection as datasets.
- Fine-tuned an LLM to solve the shopping objective detection and inference tasks simultaneously.
- Contributed to approximately $64 million in increased revenue for Amazon.

AWARDS

- Alexa Prize Academic Research Sponsorship, 2023
- SIGIR Student Travel Grant, 2022
- The Web Conference Student Scholarship, 2021
- 1st in Selection Contest for the 31st National Olympiad in Informatics in Fujian Province (2014) (top 0.03%)
- 2nd Prize in the 7th Asia and Pacific Informatics Olympiad 2014 (APIO 2014) (top 0.06%)
- 3rd Prize in the 31st National Olympiad in Informatics (NOI 2014) (top 0.23%)

PROFESSIONAL SKILLS

- Programming Languages and Tools: Python (including PyTorch and Scikit-Learn), C/C++

PUBLICATIONS

AutoLossGen: Automatic Loss Function Generation for Recommender Systems
***Zelong Li**, Jianchao Ji, Yingqiang Ge, Yongfeng Zhang.* In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2022**), July 11 - 15, 2022, Madrid, Spain.

From Kepler to Newton: Explainable AI for Science Discovery
***Zelong Li**, Jianchao Ji, Yongfeng Zhang.* ICML-AI4Science 2022.

Efficient Non-Sampling Knowledge Graph Embedding
***Zelong Li**, Jianchao Ji, Zuohui Fu, Yingqiang Ge, Shuyuan Xu, Chong Chen and Yongfeng Zhang.* In Proceedings of the Web Conference 2021 (**WWW 2021**), April 19 - 23, 2021, Ljubljana, Slovenia.

APP-GEN: Automatic Personalized Prompt Generation for Recommendation Foundation Models
***Zelong Li**, Jianchao Ji, Yingqiang Ge, Wenyue Hua and Yongfeng Zhang.* Under Review

Counterfactual Collaborative Reasoning
*Jianchao Ji, **Zelong Li**, Shuyuan Xu, Max Xiong, Juntao Tan, Yingqiang Ge, Hao Wang, Yongfeng Zhang.* In Proceedings of the 16th ACM International Conference on Web Search and Data Mining (**WSDM 2023**), February 27 - March 3, 2023, Singapore.

Efficient Non-Sampling Graph Neural Networks
*Jianchao Ji, **Zelong Li**, Shuyuan Xu, Yingqiang Ge, Juntao Tan, Yongfeng Zhang.* **Information 2023**.

Explainable Fairness in Recommendation
*Yingqiang Ge, Juntao Tan, Yan Zhu, Yinglong Xia, Jiebo Luo, Shuchang Liu, Zuohui Fu, Shijie Geng, **Zelong Li** and Yongfeng Zhang.* In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2022**), July 11 - 15, 2022, Madrid, Spain.

HOOPS: Human-in-the-Loop Graph Reasoning for Conversational Recommendation
*Zuohui Fu, Yikun Xian, Yaxin Zhu, Shuyuan Xu, **Zelong Li**, Gerard de Melo and Yongfeng Zhang.* In Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2021**), July 11 - 15, 2021, Virtual Event, Canada.

Counterfactual Evaluation for Explainable AI
*Yingqiang Ge, Shuchang Liu, **Zelong Li**, Shuyuan Xu, Shijie Geng, Yunqi Li, Juntao Tan, Fei Sun, Yongfeng Zhang.* arXiv:2109.01962.

A Survey on Trustworthy Recommender Systems
*Yingqiang Ge, Shuchang Liu, Zuohui Fu, Juntao Tan, **Zelong Li**, Shuyuan Xu, Yunqi Li, Yikun Xian and Yongfeng Zhang.* arXiv:2207.12515.

PROJECTS

Web Intelligent Systems and Economics Lab, Department of Computer Science, Rutgers University

Advisor: Yongfeng Zhang, Assistant Professor, Department of Computer Science.

Automatic Personalized Prompt Generation for Recommendation Foundation Models Sep 2022 – Jan 2023

- Proposed a framework to generate personalized prompts for recommendation foundation models automatically.
- Developed surrogate metrics to generate effective automated personalized prompts efficiently.
- Designed an iterative and alternative token update schedule to solve the inflating search space derived from user-specific tokens.

Automatic Loss Function Generation for Recommender Systems Jun 2021 – Jan 2022

- Designed the efficient nested loss function search framework for recommender systems with basic operators.
- Used reinforcement learning to search and construct high-quality loss functions for given data and metrics.
- Developed proxy test and reward filtering mechanism to speed up the loss generation process.

Explainable AI in Science Discovery Sep 2020 – May 2021

- Used Explainable AI, including neural networks and symbolic regression, to rediscover Kepler’s and Newton’s laws on Tycho Brahe's astronomical observation data.
- Compared Explainable AI and black-box AI for future science discovery by using AI.
- Proposed a solution to augment limited observation data by neural networks with PyTorch.

Efficient Non-Sampling Knowledge Graph Embedding Sep 2019 – Aug 2020

- Designed non-sampling frameworks for knowledge graph embedding applicable to several existing models.
- Derived an efficient method to mitigate the time and space bottlenecks caused by the non-sampling strategy.
- Conducted comprehensive experiments with PyTorch to show that the framework increases both accuracy and efficiency for knowledge graph embedding.

Knowledge Extraction for Explanation Generation on Recommender Systems Aug 2018 – Sep 2018

- Designed and implemented the algorithm with Python to calculate all paths under a certain length between two designated nodes on a knowledge graph.
- Constructed knowledge graphs from reviews on Amazon and heterogeneous information about products.
- Composed datasets on knowledge graphs from heterogeneous information for explainable recommender systems.

Information Retrieval Group, Department of CST, Tsinghua University Dec 2017 – Jul 2019

Advisor: Yiqun Liu, Associate Professor, Information Retrieval Group.

Chinese Query Categorization

- Devised algorithms to categorize Chinese queries based on domains retrieved from search engines.
- Applied the categories to a small part of datasets for verifying effectiveness manually.
- Established datasets of categorized queries on a commercial search engine for task division during a session.

Database Research Group, Department of CST, Tsinghua University Nov 2016 – Aug 2017

Advisor: Guoliang Li, Associate Professor, Database Research Group.

Road Network Matching

- Implemented ST-Matching algorithm designed for matching trajectories with road networks on a digital map.
- Utilized public road network and GPS trajectories for testing and verifying the effectiveness of the algorithm.

ACADEMIC SERVICES

- PC member: SDM 2024, AAAI 2024, KDD 2023, AAAI 2023, CIKM 2023
- Journal Reviewer: TOIS 2022
- Conference Reviewer: TheWebConf 2024, Recsys 2023, SIGIR 2023, TheWebConf 2023, NCIT 2022, CIKM 2021, NeurIPS 2020

TEACHING EXPERIENCE

Teaching Assistant

- Fall 2021 & Fall 2020 & Fall 2019: CS344: Design and Analysis of Algorithms
- Summer 2021: CS211: Computer Architecture
- Spring 2021: CS419: Computer Security
- Summer 2020: CS 205: Introduction to Discrete Structures I
- Spring 2020: CS323: Numerical Analysis and Computing