

SHUAISHUAI ZU

M.S. | Researcher

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EDUCATION

Southwest University, Chongqing, China

2021 — current

Major: Computer Science, WAM: 86.42/100;

Courses: Pattern Recognition and Machine Learning, Network Science, Knowledge Analysis and Knowledge Discover

Research Interests: Knowledge Tracing, Contrastive Learning, Graph Embedding, Time Series Prediction

Chongqing Jiaotong University, Chongqing, China

2017 — 2021

Major: Information and Computing Science, GPA:3.24/4, Junior/Senior GPA: 3.89/4;

Courses: Mathematical Analysis, Discrete Mathematics, Complex Analysis, Digital Signal Processing, Ordinary Differential Equation

AWARD AND ACHIEVEMENTS

- First Class Academic Scholarship(top 20%) 2021, 2022
- HUAWEI Cup National Graduate Student Mathematical Contest in Modeling 2nd Prize 2021, 2022
- Merit Student Award(top 5%) 2022
- American Mathematical Contest in Modeling H Prize 2021

SELECTED PROJECTS

1. **Dynamic real-time monitoring and optimal maintenance of municipal utility tunnel**, *Research Assistant* 2019 — 2020
 - Gathered data from sensors deployed in tunnels, progressing the data for subsequent analysis.
 - Leveraged SVM algorithms to analyze and assess the breakdown situations within the utility tunnel.
 - Introduced the innovative approach of employing Genetic Algorithms (GA) to optimize the hyperparameters of SVM, resulting in improved classification performance.
2. **Research on adaptive micro-open learning supported by artificial intelligence**, *Research Assistant* 2021 — 2022
 - Developed an IRT-based deep learning model, predicting student performance in responding to the given questions.
 - Implemented contrastive learning to alleviate the issue of sparse model input, enhancing the robustness of our proposed model.
 - In the end, our proposed model achieved state-of-the-art of knowledge tracing at the time.
3. **Research on knowledge tracking model based on causal representation**, *Project Manager* 2023 — current
 - Analysed the causal dependencies of learning interactions within learning interactions, constructing the corresponding cause-effect graphs.
 - Design a directed graph embedding method to update the interaction embeddings. Additionally, proposed a regularization method to mitigate representation collapse.
 - Modified the attention mechanism to enhance our model's long-term prediction ability, resulting in improved accuracy performance.

PUBLICATIONS

Preprint Articles

1. **Shuaishuai Zu**, Li Li and Jun Shen, "CAKT: Coupling Contrastive Learning with Attention Networks for Interpretable Knowledge Tracing", IJCNN, **2023**, CCF: C
2. **Shuaishuai Zu**, Li Li, Jun Shen and Yafei Liu, "Contrastive Learning Augmented Graph Auto-Encoder for Graph Embedding", ICONIP, **2023**, CCF: C
3. Ge Zhao, **Shuaishuai Zu**, Li Li and Zhisheng Yang, "Multi-level Noise Filtering and Preference Propagation Enhanced Knowledge Graph Recommendation", ADMA, **2023**, CCF: C
4. Yafei Liu, **Shuaishuai Zu** and Li Li, "Improving Distance Based Knowledge Graph Embedding via Contrastive Learning", ADMA, **2023**, CCF: C

Peer-reviewed Articles

1. **Shuaishuai Zu**, Li Li and Jun Shen, "Causal-KT: Causality Inspired Knowledge Tracing", Neurocomputing, **2023**, CCF: B
2. Ge Zhao, **Shuaishuai Zu**, Li Li and Zhisheng Yang, "Enhancing Knowledge-aware Recommendation with An Efficient Cross-view Contrastive Learning", under review.
3. Shiyu Zhu, Li Li, Shanxiong Chen, **Shuaishuai Zu**, Zhisheng Yang, Wei Li and Wenwen Zhao, "Personalized Index Autoencoders is Knowledge Tracking Need", under review.

Invention Patent

1. A topic recommendation method and system based on personalized ability, **2022**