Yaokun Liu

Research Interests: Data Mining, Information Retrieval, Recommender Systems

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EDUCATION

Tianjin University (TJU)   Tianjin, China

M.Sc. in Artificial Intelligence   *Aug. 2021 - Present*

- **GPA**: 3.70/4.00
- **Relevant Coursework**: Natural Language Processing, Model Checking and Program Verification, Advanced Artificial Intelligence

University of Science and Technology Beijing (USTB)   Beijing, China

B.E. in Intelligence Science and Technology   *Sept. 2017 - Jun. 2021*

- **GPA**: 3.76/4.00
- **Relevant Coursework**: Linear Algebra, Probability and Mathematical Statistics, Fundamentals of Programming, Foudation of Machine Learning, Pattern Recognition, Machine Intelligence

PUBLICATIONS

[1] **Yaokun Liu**, Xiaowang Zhang, Minghui Zou, and Zhiyong Feng. Attribute Simulation for Item Embedding Enhancement in Multi-interest Recommendation. In Proceedings of the 17th ACM International Conference on Web Search and Data Mining **(WSDM 2024)**. (To appear)

[2] **Yaokun Liu**, Xiaowang Zhang, Minghui Zou, and Zhiyong Feng. Co-occurrence Embedding Enhancement for Long-tail Problem in Multi-Interest Recommendation. In Proceedings of the 17th ACM Conference on Recommender Systems **(RecSys 2023)**.

[3] Shuang Li, **Yaokun Liu**, Xiaowang Zhang, Yuexian Hou, and Zhiyong Feng. Multi-interest Recommendation on Shopping for Others. In Companion Proceedings of the ACM Web Conference 2023 **(WWW 2023)**.

[4] Zizhong Zhu, Shuang Li, **Yaokun Liu**, Xiaowang Zhang, and Zhiyong Feng. High-level Preferences as Positive Examples in Contrastive Learning for Multi-interest Sequence Recommendation. <u>Under review</u> for the ACM Web Conference 2023 **(WWW 2024)**.

SKILLS

Tool Kits: Git, Docker, Conda, LaTeX

Programming Languages: Python, C/C++, Matlab, Bash/Zsh

Machine Learning Frameworks: PyTorch, TensorFlow

Data Science: NumPy, SciPy, Pandas, Matplotlib, Seaborn

Languages: Chinese (native), English (IELTS 2019: overall score of 7.0 {L8.0 R7.5 S6.0 W6.0}, planning to retake soon)

SERVICES

Conference Review

- Sub reviewer - International Joint Conference on Knowledge Graphs (IJCKG), 2022.

Journal Review

- Sub reviewer - World Wide Web Journal (WWWJ), 2023.
- Sub reviewer - Journal of Frontiers of Computer Science and Technology (JCST), 2023.

TEACHING

Undergraduate Course - Knowledge Engineering   College of Intelligence and Computing, TJU

Teaching Assistant   *Oct. 2021 - Jan. 2022*

- Assisted in course preparation, material development, exams, and grading assignments.
- Provided guidance and clarification to undergraduate students.

RESEARCH EXPERIENCE

Item Embedding Deficiency of Multi-interest Recommendation in Matching Stage   TJU

Individual Graduate Researcher   *Apr. 2023 - Present*

- Conducted theoretical deduction to prove the item attribute simulation feasibility.
- Built a streamlined item embedding enhancement module, which provides a reliable alternative to the laborious attribute annotation task.
- Comprehensive experiments demonstrate SOTA performance on Recall, Hit Rate, and NDCG across four open datasets.
- The related paper (as the first author) is published on WSDM 2024.

Long-tail Problem in Multi-interest Recommendation   TJU

Individual Graduate Researcher   *Nov. 2022 - Apr. 2023*

- Conducted motivation experiments and pinpointed the inferior performance of tail items is mainly due to overfitting.
- Proposed a graph convolution variant, which enhances item embeddings by enriching training contexts of tail items by associating with co-occurring head items.
- Extensive experiments demonstrate our method boosting the average Recall@50 for tail items by 14.62%.
- The related paper (as the first author) is published on RecSys 2023.

Multi-interest Recommendation with Multiple Demanders   TJU

Collaborative Graduate Researcher   *Apr. 2022 - Present*

- Focus on user modeling in situations where multiple demanders share one shopping account.
- Preliminary work employing adversarial learning and graph representation learning is presented as the poster (as the second author) on WWW 2023.
- The latest paper (as the third author) with an attempt at contrastive learning is under review for WWW 2024.

Sign Language Recognition Glove based on Multilayer Perceptron   USTB

Collaborative Undergraduate Researcher   *Jun. 2020 - Oct. 2020*

- Collected data, including acceleration and angular velocity, from eight MPU6050 gyroscopes on the gloves through STM32.
- Trained a multilayer perceptron neural network to differentiate and recognize distinct sign language gestures and displayed the corresponding text on a screen.
- The outcome achieved the third prize in the 2020 College Student Sensor Competition.