

Chengkai Liu

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Education

Texas A&M University

Ph.D. student in Computer Science, advised by **Prof. James Caverlee**

College Station, TX

Aug. 2022 – Present

Shanghai Jiao Tong University

B.Eng. in Computer Science, advised by **Prof. Yong Yu**

Shanghai, China

Sept. 2018 – June 2022

- Member of **ACM Honors Class**, a pilot CS program for top talented students.

Research Interests

My research focuses on recommender systems, model efficiency, and large language models, with a particular interest in developing efficient recommender systems. My previous work has contributed to improving the efficiency of sequential recommenders. Currently, I am working on enhancing the efficiency of large language models for recommendation.

Selected Publications [Google Scholar]

Behavior-Dependent Linear Recurrent Units for Efficient Sequential Recommendation

- Chengkai Liu**, Jianghao Lin, Hanzhou Liu, Jianling Wang, James Caverlee
- CIKM 2024 [PDF] [code]

Mamba4Rec: Towards Efficient Sequential Recommendation with Selective State Space Models

- Chengkai Liu**, Jianghao Lin, Jianling Wang, Hanzhou Liu, James Caverlee
- RelKD@KDD 2024 (**Best Paper Award**) [PDF] [code]

Towards Symmetry-Aware Generation of Periodic Materials

- Youzhi Luo, **Chengkai Liu**, Shuiwang Ji
- NeurIPS 2023 (**Spotlight**) [PDF] [code]

Multi-Behavior Sequential Transformer Recommender

- Enming Yuan, Wei Guo, Zhicheng He, Huifeng Guo, **Chengkai Liu**, Ruiming Tang
- SIGIR 2022 [PDF] [code]

A Survey on Diffusion Models for Recommender Systems

- Jianghao Lin, Jiaqi Liu, Jiachen Zhu, Yunjia Xi, **Chengkai Liu**, Yangtian Zhang, Yong Yu, Weinan Zhang
- In Submission 2024 [PDF] [repo]

Research Experience

Efficient Sequential Recommendation. Developed efficient sequential recommenders with linear RNNs and state space models, addressing the dilemma between performance and efficiency. Papers accepted to CIKM'24 and RelKD@KDD'24.

Diffusion Models for Periodic Material Generation. Designed symmetry-aware score-based diffusion models to enhance performance in generating periodic material with optimized specific properties. Paper accepted to NeurIPS'23.

Multi-Behavior Recommendation. Developed Transformer-based multi-behavior recommenders that effectively model multi-behavior dependencies and diverse multi-behavior sequential dynamics, significantly improving recommendation performance. Paper accepted to SIGIR'22.

Talks

- Invited talk at Uber on Mamba4Rec and Efficient Sequential Recommendation Aug. 2024

Honors and Awards

- Best Paper Award for KDD 2024 Resource-efficient Learning for Knowledge Discovery Workshop 2024
- Zhiyuan Honor Scholarship, Shanghai Jiao Tong University 2018 - 2021

Academic Service

- Conference Reviewer: CIKM 2023, KDD 2024, NeurIPS 2024, CIKM 2024, ICLR 2025.
- Journal Reviewer: IEEE Transactions on Knowledge and Data Engineering.