FUYUAN LYU

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SUMMARY

I'm currently a Ph.D. candidate at McGill University. I am fortunate to be advised by Prof Jin Guo and Prof Xue Liu.

Prior to joining McGill, I got my bachelor's degree in Computer Science and Zhiyuan Honour Degree in Engineering from Shanghai Jiao Tong University(SJTU). I was advised by Prof Li Jiang for my thesis and worked with Prof Xiaokang Yang.

My research interest lies in utilizing Recommender Systems and Graph Neural Networks in the Software Engineering domain.

EDUCATION

- PhD, Computer Science, McGill University, 2019-2024(exp.)
- BEng, Computer Science, Shanghai Jiao Tong University, 2015-2019
- Zhiyuan Honor Degree for BEng, Shanghai Jiao Tong University, 2015-2019

SELECTED PUBLICATIONS & PREPRINT

Dugang Liu, Chaohua Yang, Xing Tang, Yejing Wang, **Fuyuan Lyu**, Weihong Luo, Xiuqiang He, Zhong Ming, Xiangyu Zhao, "MultiFS: Automated Multi-Scenario Feature Selection in Deep Recommender Systems", *In Proceedings of the 17th ACM International Conference Web Search and Data Mining* (**WSDM 2024**)

Fuyuan Lyu, Xing Tang, Dugang Liu, Chen Ma, Weilong Luo, Xiuqiang He, Xue Liu, "Towards Hybrid-grained Feature Interaction Selection for Deep Sparse Network", *In Proceedings of the 37th Conference on Neural Information Processing Systems* (**NeurIPS 2023**)

Xing Tang, Yang Qiao, Yuwen Fu, **Fuyuan Lyu**, Dugang Liu, Xiuqiang He, "OptMSM: Optimizing Multi-Scenario Modeling for Click-Through Rate Prediction", *In Proceedings of Machine Learning and Knowledge Discovery in Databases: Applied Data Science and Demo Track 2023* (**ECML-PKDD 2023**)

Dugang Liu, Xing Tang, Han Gao, **Fuyuan Lyu**, Xiuqiang He, "Explicit Feature Interaction-aware Uplift Network for Online Marketing", *In Proceedings of The 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (**KDD 2023**)

Fuyuan Lyu*, Xing Tang*, Dugang Liu, Chen Liang, Xiuqiang He, Xue Liu, "Optimizing Feature Set for Click-through Rate Prediction", *In Proceedings of The Web Conference 2023* (**WWW 2023**)

Fuyuan Lyu*, Xing Tang*, Hong Zhu, Huifeng Guo, Yingxue Zhang, Ruiming Tang, Xue Liu, "OptEmbed: Learning Optimal Embedding Table for Click-through Rate Prediction", *In Proceedings of the 31st ACM International Conference on Information and Knowledge* (**CIKM 2022**)

Fuyuan Lyu*, Xing Tang*, Huifeng Guo, Ruiming Tang, Xiuqiang He, Rui Zhang, Xue Liu, "Memorize, Factorize, or be Naïve: Learning Optimal Feature Interaction Methods for CTR Prediction", *In Proceedings of the 38th IEEE International Conference on Data Engineering* (**ICDE 2022**)

Fuyuan Lyu, Xing Tang, Dugang Liu, Haolun Wu, Chen Ma, Xiuqiang He, Xue Liu, "Feature Representation Learning for Click-through Rate Prediction: A Review and New Perspectives", *CoRR*, Feb 2023

Haolun Wu, Yansen Zhang, Chen Ma, **Fuyuan Lyu**, Fernando Diaz, Xue Liu. "A Survey of Diversification Techniques in Search and Recommendation", *CoRR*, Dec 2022

Yuecai Zhu, **Fuyuan Lyu**, Chengming Hu, Xi Chen, Xue Liu, "Encoder-Decoder Architecture for Supervised Dynamic Graph Learning: A Survey", *CoRR*, Mar 2022

Fuyuan Lyu, Shien Zhu, Weichen Liu. "Cross-filter compression for CNN inference acceleration", *CoRR*, May 2020.

RESEARCH EXPERIENCE

Huawei Noah's Ark Lab, Canada **November 2021 to Jun 2023**

Research Intern *Advisor: Dr. Yingxue Zhang*

- Optimal Embedding Table for CTR Prediction: Study the influence of the size of the embedding table in CTR Prediction. Propose a unified framework to optimize the size of the embedding table and model parameters automatically.

Huawei Noah's Ark Lab **March 2021 to August 2021**
Research Intern *Advisor: Dr. Xing Tang*
- Optimal Modelling Methods for Feature Interaction in CTR Prediction: Study the influence of modelling methods for feature interaction. Propose a novel deep CTR prediction framework including various modelling methods and a two-stage learning algorithm to select the optimal for each feature interaction automatically.

McGill University **Sept 2019 to present**
Research Assistant *Advisor: Prof. Jin Guo & Prof. Xue Liu*
- Recommending Repositories to Support Reproducibility: Studied the reproducibility of different ML papers. Utilized the Recommendation System on GitHub to support reproducing ML papers.

Shanghai Jiao Tong University **Feb 2019 to Aug 2019**
Research Assistant *Advisor: Prof. Li Jiang*
- Dual-flow Training Framework to Exploit Structured Sparsity: Support structured sparsity from framework level. Propose a flexible dual-flow mechanism to decouple the non-zero data and the sparse network structure. Integrate the dual-flow mechanism into the deep learning compiler stack built on TVM.

Nanyang Technological University **Aug 2018 to Feb 2019**
Research Assistant *Advisor: Prof. Weichen Liu*
- Cross-filter Compression: Address the conflict between uniform quantization and compact network design when speedup CNN. Explored CNN spatial-adjunct layer property and proposed cross-filter compression method.

Shanghai Jiao Tong University **Jun 2017 to Feb 2018**
Research Assistant *Advisor: Prof. Xiaokang Yang*
- Explored the possibility of more realistic cloth transfer by generating and transferring structure in 3D dimension.
- Designed a specific generative adversarial network to animate cartoon figures.

TEACHING AND MENTORING EXPERIENCE
- 2020 Winter - COMP303 Teaching Assistant
- Reviewer of WWW, AAAI, CIKM, WSDM

SELECTED AWARDS
- NeurIPS Financial Assistance, 2023
- McGill GREAT Award for NeurIPS, 2023
- SIGIR Student Travel Grant for CIKM, 2022
- Wolfe Fellowship in Sci & Tech, 2019-2022
- Grad Excellence Award of McGill University, 2019-2024
- Zhiyuan Honor Degree of Engineering of Shanghai Jiao Tong University(1%), 2019
- Zhiyuan Oversea Research Scholarship (1st class) of Shanghai Jiao Tong University, 2019
- Zhiyuan Outstanding Student Scholarship of Shanghai Jiao Tong University(5%), 2019
- Microsoft Intelligence Award , awarded to 4/438 participants in the 1st HACKxFDU Hackathon, 2016.

SKILLS
Software Python, C++, Java
Languages English: Professional Proficiency. Mandarin: Native. French: Just a few words.