Xiaoqiang Lin

Ph.D. Candidate

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Research Interests

- Data-centric AI for LLMs (e.g., data selection/curation in different stages of LLMs).
- Prompt optimization for LLMs.
- Data valuation (e.g., data attribution, data debugging).
- Collaborative machine learning (e.g., federated learning, incentive mechanism).

Education

2021 – 2025 **Ph.D. in Computer Science.**
National University of Singapore.
Advisors: Prof. See-Kiong Ng and Prof. Bryan Low.
GPA: 4.83/5.

2016 – 2020 **Bachelor of Science in Statistics (Data Science Track).**
Fudan University, Shanghai.
Advisor: Prof. Zhongyu Wei.
Thesis title: Graph Neural Network-Based Representation Learning of Legislator and Legislation for Roll Call Prediction.
GPA: 3.69/4.

Publications

- Zhaoxuan Wu*, **Xiaoqiang Lin***, Zhongxiang Dai, Wenyang Hu, Yao Shu, See-Kiong Ng, Patrick Jaillet, Bryan Kian Hsiang Low. "Prompt Optimization with EASE? Efficient Ordering-aware Automated Selection of Exemplars". In *Proceedings of the 38th Neural Information Processing Systems (NeurIPS2024)*, Vancouver, Canada, Dec 9-15, 2024. [Acceptance rate: 25.8%].

- Zijian Zhou, **Xiaoqiang Lin**, Xinyi Xu, Alok Prakash, Daniela Rus, Bryan Kian Hsiang Low. "DETAIL: Task DEmonsTration Attribution for Interpretable In-context Learning". In *Proceedings of the 38th Neural Information Processing Systems (NeurIPS2024)*, Vancouver, Canada, Dec 9-15, 2024. [Acceptance rate: 25.8%].

- Wenyang Hu, Yao Shu, Zongmin Yu, Zhaoxuan Wu, **Xiaoqiang Lin**, Zhongxiang Dai, See-Kiong Ng, Bryan Kian Hsiang Low. "Localized Zeroth-Order Prompt Optimization". In *Proceedings of the 38th Neural Information Processing Systems (NeurIPS2024)*, Vancouver, Canada, Dec 9-15, 2024. [Acceptance rate: 25.8%].

- Xinyi Xu, Zhaoxuan Wu, Rui Qiao, Arun Verma, Yao Shu, Jingtan Wang, Xinyuan Niu, Zhenfeng He, Jiangwei Chen, Zijian Zhou, Gregory Kang Ruey Lau, Hieu Dao, Lucas Agussurja, Rachael Hwee Ling Sim, **Xiaoqiang Lin**, Wenyang Hu, Zhongxiang Dai, Pang Wei Koh, Bryan Kian Hsiang Low. "Position Paper: Data-Centric AI in the Age of Large Language Models". In *EMNLP 2024 Findings*, Miami, Florida, Nov 12 –16, 2024.

Publications (continued)

Xiaoqiang Lin, Xinyi Xu, Zhaoxuan Wu, See-Kiong Ng, Bryan Kian Hsiang Low. "Distributionally Robust Data Valuation". In *Proceedings of the 41th International Conference on Machine Learning (ICML2024)*, Vienna, Austria, Jul 21-27, 2024. [Acceptance rate: 27.5%].

Xiaoqiang Lin*, Zhaoxuan Wu*, Zhongxiang Dai, Wenyang Hu, Yao Shu, See-Kiong Ng, Patrick Jaillet, Bryan Kian Hsiang Low. "Use Your INSTINCT: INSTruction optimization for LLMs usIng Neural bandits Coupled with Transformers". In *Proceedings of the 41th International Conference on Machine Learning (ICML2024)*, Vienna, Austria, Jul 21-27, 2024. [Acceptance rate: 27.5%, co-first author].

Jingtan Wang*, **Xiaoqiang Lin***, Rui Qiao*, Chuan-Sheng Foo, Bryan Kian Hsiang Low. "Helpful or Harmful Data? Fine-tuning-free Shapley Attribution for Explaining Language Model Predictions". In *Proceedings of the 41th International Conference on Machine Learning (ICML2024)*, Vienna, Austria, Jul 21-27, 2024. [Acceptance rate: 27.5%, co-first author].

Xiaoqiang Lin*, Xinyi Xu*, See-Kiong Ng, Chuan Sheng Foo, Bryan Kian Hsiang Low. "Fair yet Asymptotically Equal Collaborative Learning". In *Proceedings of the 40th International Conference on Machine Learning (ICML2023)*, Hawaii, Jul 23-29, 2023. [Acceptance rate: 28%, co-first author].

Yuqiao Yang*, **Xiaoqiang Lin***, Geng Lin, Zhongyu Wei, Zengfeng Huang. "Joint Representation Learning of Legislator and Legislation for Roll Call Prediction". In *Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI 2020)*, Yokohama, Japan, Jan 7-15, 2020. [Acceptance rate: 12.6%, co-first author].

Workshop Papers & Pre-Prints

Xiaoqiang Lin, Zhongxiang Dai, Arun Verma, See-Kiong Ng, Patrick Jaillet, Bryan Kian Hsiang Low. "Prompt Optimization with Human Feedback". ICML 2024, Workshop on Models of Human Feedback for AI Alignment. Selected as Oral

Arun Verma, Zhongxiang Dai, **Xiaoqiang Lin**, Patrick Jaillet, Bryan Kian Hsiang Low. "Neural Dueling Bandits". ICML 2024, Workshop on Foundations of RL and Control.

Yao Shu, **Xiaoqiang Lin**, Zhongxiang Dai, Bryan Kian Hsiang Low. "Federated Zeroth-Order Optimization using Trajectory-Informed Surrogate Gradients". Pre-print, arXiv, 2023.

Book Chapters

Xiaoqiang Lin, Xinyi Xu, Zhaoxuan Wu, Rachael Hwee Ling Sim, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low. "Fairness in Federated Learning". In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 16, pages 299-309, Academic Press, 2024.*

Zhaoxuan Wu, Xinyi Xu, Rachael Hwee Ling Sim, Yao Shu, **Xiaoqiang Lin**, Lucas Agussurja, Zhongxiang Dai, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low. "Data Valuation in Federated Learning". In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 16, pages 299-309, Academic Press, 2024.*

Book Chapters (continued)

📕 Rachael Hwee Ling Sim, Sebastian Shenghong Tay, Xinyi Xu, Yehong Zhang, Zhaoxuan Wu, **Xiaoqiang Lin**, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low. "Incentives in Federated Learning". In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 16, pages 299-309, Academic Press, 2024.*

Invited Talks

📕 Use Your INSTINCT: INSTruction optimization usIng Neural bandits Coupled with Transformers. @ Deep Learning and Optimization Seminar (Jointly organized by Westlake University, City University of Hong Kong, Peking University). Oct 24, 2023.

Work Experience

Jul 2020 – Aug 2021   📕 **Machine Learning Engineer.**
Ant Group.
Utilize user data in Alipay to do fraud detection for insurance based on a recommendation system approach. Submit a paper to ICDM 2021 based on personalized recommendations for fraud detection.

Jul 2018 – Oct 2018   📕 **Data Science Intern.**
Trip.com Group.
Develop recommendation models to recommend personalized products (e.g., destinations/hotels/tickets) for different users in the Trip.com mobile app.

Honors and Awards

2023   📕 Award of Teaching Fellowship, National University of Singapore (1 of 3 selected CS Ph.D. students).

2023, 2024   📕 Research Achievement Award, National University of Singapore.

2020   📕 Outstanding Graduates, Fudan University.

2017, 2018, 2019   📕 Excellent Student Scholarship, Fudan University.

Professional Services

📕 **Conference Reviewer for** ICLR'2024.

📕 **Conference Reviewer for** NeurIPS'2024.

📕 **Conference Reviewer for** ICML'2021, 2024.

📕 **Conference Reviewer for** AISTATS'2024.

📕 **Conference Reviewer for** AAAI'2023, 2024, 2025.

📕 **Conference Reviewer for** ACML'2023.