# KAIXIANG LIN

Github & Google Scholar & Homepage

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## EDUCATION

**Michigan State University**                                                          *Aug. 2015 - Aug. 2020*
Ph.D. student in Computer Science & Engineering
Advisor: Dr. Jiayu Zhou

**University of Science and Technology of China**                            *Sept. 2010 - July 2014*
B.E. in Electronic Information Engineering

## PROFESSIONAL EXPERIENCE

Applied Scientist II at **Amazon Lab 126, Sunnyvale, CA**                  *Oct 5th 2020 - present*

- Embodied Artificial Intelligence.

Research Intern at **Google Display Ads, Mountain View, CA**      *May 28th - Aug. 30th 2019*

- Applied learning to rank algorithms (including our ranking policy gradient) to display format selection problems. Seven models checked into production for three ranking tasks.

- Increased revenue by 1.14% based on five days online A/B testing.

Research Intern at **Didi AI Labs, Beijing**                                      *May - Aug. 2017, 2018*

- Designed and implemented constrained multi-armed bandit algorithm for a multi-channel marketing project. Return on Investment (ROI) increased over 23% with the same scale of investment. This algorithm was running online at the end of my internship.

- Proposed and implemented a novel multi-agent deep reinforcement learning algorithm for large scale fleet management that is able to coordinate large number of agents and increase the GMV over 15% based on a simulator that is calibrated with real data.

## SELECTED PUBLICATIONS

Zhaonan Qu*, **Kaixiang Lin**\*, Zhaojian Li, Jiayu Zhou. "Federated Learning's Blessing: FedAvg has Linear Speedup", ICLR Distributed and Private Machine Learning workshop, 2021. (\* **equal contribution**).

Boyang Liu, Ding Wang, **Kaixiang Lin**, Pang-Ning Tan, Jiayu Zhou. "RCA: A Deep Collaborative Autoencoder Approach for Anomaly Detection", IJCAI, 2021.

Zhuangdi Zhu, **Kaixiang Lin**, Jiayu Zhou. "Transfer Learning in Deep Reinforcement Learning: A Survey" Arxiv, 2020.

Zhuangdi Zhu, **Kaixiang Lin**, Bo Dai, Jiayu Zhou. "Learning Sparse Rewarded Tasks from Sub-Optimal Demonstrations", Arxiv, 2020.

Zhuangdi Zhu, **Kaixiang Lin**, Bo Dai, Jiayu Zhou. "Off-Policy Imitation Learning from Observations", Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS), 2020.

**Kaixiang Lin** and Jiayu Zhou. "Ranking Policy Gradient", International Conference on Learning Representations (ICLR), 2020.

**Kaixiang Lin**, Renyu Zhao, Zhe Xu, Jiayu Zhou. "Efficient Large-Scale Fleet Management via Multi-Agent Deep Reinforcement Learning", the 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2018. [**Research track Oral**][**Acceptance rate: 10.9%**]

**Kaixiang Lin**, Shu Wang, Jiayu Zhou. "Collaborative Deep Reinforcement Learning", Preprint, 2017.

Liyang Xie, Inci M. Baytas, **Kaixiang Lin**, Shu Wang, Jiayu Zhou. "Privacy-preserving distributed multi-task learning with asynchronous updates", the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2017.

Inci M. Baytas, **Kaixiang Lin**, Fei Wang, Anil K. Jain and Jiayu Zhou. "PhenoTree: Interactive Visual Analytics for Hierarchical Phenotyping from Large-Scale Electronic Health Records", IEEE Transaction on Multimedia, 2016.

**Kaixiang Lin** and Jiayu Zhou. "Interactive Multi-Task Relationship Learning", IEEE International Conference on Data Mining (ICDM), 2016.[**Oral**][**Acceptance rate: 8.5%**]

Inci M. Baytas, **Kaixiang Lin**, Fei Wang, Anil K. Jain and Jiayu Zhou. "Stochastic Convex Sparse Principal Component Analysis" EURASIP Journal on Bioinformatics and Systems Biology, 2016.

**Kaixiang Lin**, Jianpeng Xu, Inci M. Baytas, Shuiwang Ji and Jiayu Zhou. "Multi-Task Feature Interaction Learning", the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2016. [**Research track**][**Acceptance rate: 18.1%**]

Jianpeng Xu, **Kaixiang Lin**, Pang-Ning Tan and Jiayu Zhou."Synergies that Matter: Efficient Interaction Selection via Sparse Factorization Machine", SIAM International Conference on Data Mining (SDM) 2016.

## HONORS AND AWARDS

Conference Travel Grant: SDM2016, KDD2016, SDM2017, SDM2018, KDD2018
Best Poster Award, Doctoral Forum, SDM2017

## INVITED TALKS

- Invited Talk "Ranking Policy Gradient" at DRL4IR Workshop, SIGIR, July 15th, 2021.

- LinkedIn Tech Talk: "Ranking Policy Gradient: Towards Sample-efficient Reinforcement Learning", Aug 9th, 2019.

## SERVICES

Program Committee (PC) member:

- AAAI 2021, ICLR 2021, Neurips 2021, ICLR 2022.

- ICML 2020, IJCAI 2020, NeurIPS 2020, ICLR 2020, AAAI 2020.

- IJCAI 2019, IEEE BigData 2019, ICDM 2018, IEEE BigData 2018.

Journal Reviewer:

- Machine Learning

- ACM Transactions on Intelligent Systems and Technology (TIST)

- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)

- Transactions on Knowledge and Data Engineering (TKDE)

- The Transportation Research Board (TRB) 98th Annual Meeting

- International Journal of Machine Learning and Cybernetics (JMLC)

- Neurocomputing

- Pattern Recognition

- Data Mining and Knowledge Discovery

- Transactions on Knowledge Discovery from Data (TKDD)