Qingfeng Lan

Curriculum Vitae

University of Alberta
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Personal Website
Google Scholar

Qingfeng Lan is a PhD student at the University of Alberta, Canada. Generally, He is interested in developing simple and efficient machine learning algorithms supported by sound theories and verified by rigorous experiments. In particular, his research focuses on designing continual (reinforcement) learning algorithms with higher sample efficiency, memory efficiency, and computation efficiency. He believes that the ability to extract, accumulate, and exploit knowledge continually and efficiently is essential for the success of artificial general intelligence in the real world. He has also worked on meta-learning, exploration, language modeling, and quantum reinforcement learning.

Education

20.09 - 25.03 **Doctor of Philosophy in Computing Science**, *University of Alberta*, Canada.
Supervisor A. Rupam Mahmood

18.09 - 20.08 **Master of Science in Computing Science**, *University of Alberta*, Canada.
Supervisor Alona Fyshe

14.09 - 18.07 **Bachelor of Engineering in Computer Science and Technology**, *University of Chinese Academy of Sciences*, China.
Advisor Yanyan Lan (thesis advisor), Guojie Li (tutor)

17.10 - 18.03 **Visiting Non-Matriculated Programme**, *University of Oxford*, England.
Tutor Leslie Ann Goldberg

Employment

22.07 - 23.01 **Research Intern**, *Sea AI Lab*, Singapore.
Collaborator Zhongwen Xu, Shuicheng Yan
Project Learning to Optimize for Reinforcement Learning. [Link]

22.01 - 22.06 **Research Intern**, *Huawei Noah's Ark Lab*, Edmonton, Canada.
Collaborator Yangchen Pan, Jun Luo
Project Memory-efficient Reinforcement Learning with Value-based Knowledge Consolidation. [Link]

17.07 - 18.04 **Research Assistant**, *Key Laboratory of Network Data Science and Technology, Chinese Academy of Sciences*, Beijing, China.
Collaborator Yixing Fan, Yanyan Lan, Jiafeng Guo
Project A Deep Top-K Relevance Matching Model for Ad-hoc Retrieval. [Link]

Publications

*: Equal contribution

Refereed Articles

ICLR-2024 **Provable and Practical: Efficient Exploration in Reinforcement Learning via Langevin Monte Carlo**.
Haque Ishfaq*, **Qingfeng Lan***, Pan Xu, A. Rupam Mahmood, Doina Precup, Anima Anandkumar, Kamyar Azizzadenesheli. *International Conference on Learning Representations, 2023.* **Poster.** **[Link]**

TMLR-2023 **Memory-efficient Reinforcement Learning with Value-based Knowledge Consolidation**.
Qingfeng Lan, Yangchen Pan, Jun Luo, A. Rupam Mahmood. *Transactions on Machine Learning Research, 2023.* **CoLLAs certification.** **[Link]**

AISTATS-2022 **Model-free Policy Learning with Reward Gradients**.
Qingfeng Lan, Samuele Tosatto, Homayoon Farrahi, A. Rupam Mahmood. *International Conference on Artificial Intelligence and Statistics, 2022.* **Poster.** **[Link]**

ICLR-2020 **Maxmin Q-learning: Controlling the Estimation Bias of Q-learning**.
Qingfeng Lan, Yangchen Pan, Alona Fyshe, Martha White. *International Conference on Learning Representations, 2020.* **Poster.** **[Link]**

CCIR-2018 **A Deep Top-K Relevance Matching Model for Ad-hoc Retrieval**.
Zhou Yang, **Qingfeng Lan**, Jiafeng Guo, Yixing Fan, Xiaofei Zhu, Yanyan Lan and Yue Wang, Xueqi Cheng. *China Conference on Information Retrieval, 2018.* **Best Paper Award Candidate.** **[Link]**

Non-Refereed Articles

ICML-2023 **Elephant Neural Networks: Born to Be a Continual Learner**.
Qingfeng Lan, A. Rupam Mahmood. *ICML Workshop on High-dimensional Learning Dynamics, 2023.* **Poster.** **[Link]**

arXiv-2023 **Learning to Optimize for Reinforcement Learning**.
Qingfeng Lan, A. Rupam Mahmood, Shuicheng Yan, Zhongwen Xu. *arXiv preprint arXiv:2302.01470, 2023.* **[Link]**

EWRL-2023 **Overcoming Policy Collapse in Deep Reinforcement Learning**.
Shibhansh Dohare, **Qingfeng Lan**, A. Rupam Mahmood. *Sixteenth European Workshop on Reinforcement Learning, 2023.* **Poster.** **[Link]**

arXiv-2021 **Predictive Representation Learning for Language Modeling**.
Qingfeng Lan, Luke Kumar, Martha White, Alona Fyshe. *arXiv preprint arXiv:2105.14214, 2021.* **[Link]**

arXiv-2021 **Variational Quantum Soft Actor-Critic**.
Qingfeng Lan. *arXiv preprint arXiv:2112.11921, 2021.* **[Link]**

NeurIPS-2019 **Reducing Selection Bias in Counterfactual Reasoning for Individual Treatment Effects Estimation**.
Zichen Zhang, **Qingfeng Lan**, Lei Ding, Yue Wang, Negar Hassanpour, Russell Greiner. *NeurIPS Workshop on Causal Machine Learning, 2019.* **Poster Spotlight.** **[Link]**

Academic Services

Reviewer JMLR 2020, NeurIPS 2022-2023, ICLR 2023-2024, AISTATS 2023, CoLLAs 2023-2024.

Open-Source Code

Optim4RL.
A framework of learning to optimize for reinforcement learning.

Explorer.
A reinforcement learning frame based on Pytorch for exploring new ideas.

Gym Games.
A gym compatible version of various games for reinforcement learning.

Quantum Explorer.
A quantum reinforcement learning framework based on PyTorch and PennyLane.

Teaching Experience

Fall 2023 **Teaching Assistant**, *University of Alberta*, Edmonton, Canada.
CMPUT 340: Introduction to Numerical Methods

Winter 2019 **Teaching Assistant**, *University of Alberta*, Edmonton, Canada.
CMPUT 175: Introduction to the Foundations of Computation II

Fall 2018 **Teaching Assistant**, *University of Alberta*, Edmonton, Canada.
CMPUT 174: Introduction to the Foundations of Computation I

Awards & Honors

2023-2024 **Alberta Innovates Graduate Student Scholarship**, University of Alberta (CAD 31,000)

Computer skills

Language Python, Matlab, C

Framework PyTorch, Jax, Tensorflow