QIUSHI (MAX) LIN

https://qiushi-lin.github.io
qiushi_lin@sfu.ca

RESEARCH INTERESTS

Developing theoretically principled machine learning algorithms, with a focus on reinforcement learning.

EDUCATION

Simon Fraser University (SFU), Burnaby, Canada *2021 - 2023*
M.Sc. in Computing Science (Thesis-Based Program) GPA: 4.06/4.33

- Advisor: Hang Ma
- Courses: Theoretical Foundations of Reinforcement Learning [Ongoing], Optimization for Machine Learning [A], Statistical Machine Learning [A], Graph Representation Learning [A], (Multi-Agent) Intelligent Systems [A+], Data Mining [A]
- Thesis: Learning Cooperation for Partially Observable Multi-Agent Path Finding [pdf]

Southern University of Science and Technology (SUSTech), Shenzhen, China *2016 - 2020*
B.Eng. in Computer Science and Technology GPA: 3.75/4.00

- Graduation with Departmental Highest Honors

RESEARCH EXPERIENCES

Research Assistant, AIRob Lab (SFU Robotics Research Group) *2021- 2023*

- supervised by Prof. Hang Ma
- focusing on reinforcement learning and multi-agent systems

Research Intern, Illinois Institute of Technology *2019*

- supervised by Prof. Xin Chen
- focusing on semantic segmentation of 3D point clouds for LiDAR sensor data

PUBLICATIONS AND PREPRINTS

[2] **Mean Field Control with Envelope Q-learning for Moving Agents in Formation**
Qiushi Lin and Hang Ma.
Preprint (In Submission) [pdf] [code]
Short Abstract: We proposed an adaptable multi-objective multi-agent reinforcement learning algorithm that combines mean field control and envelop Q-learning for moving agents in formation, and provided theoretical analysis and empirical evaluation.

[1] **SACHA: Soft Actor-Critic with Heuristic-Based Attention for Partially Observable Multi-Agent Path Finding**
In IEEE Robotics and Automation Letters (RA-L) 2023 [pdf] [code]
Qiushi Lin and Hang Ma.
Short Abstract: We designed a novel multi-agent actor-critic reinforcement framework for partially observable multi-agent path finding. We integrated the heuristic-based attention mechanisms to enable the learned model to generalize among multiple instances on a large scale.

AWARDS AND HONORS

- Westak International Sales, Inc. Graduate Scholarship, SFU 2023
- Deparmental Highest Honors of Graduation, SUSTech 2020

TEACHING EXPERIENCES

Teaching Assistant, SFU

- CMPT 310: Introduction to Artificial Intelligence
- CMPT 417/827: (Multi-Agent) Intelligent Systems
- MACM 101: Discrete Mathematics

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Matlab, SQL
Frameworks and Tools: Pytorch, Tensorflow, Linux, GitHub, LaTeX