MINGHUAN LIU

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EDUCATION

Shanghai Jiaotong University (SJTU) *Sep. 2019 - Now*
Ph.D. in Computer Science and Technology
Research Interest: Imitation Learning, Reinforcement Learning, Multi-Agent Systems
- Apex Data & Knowledge Management Lab
- Group leader of the ApexRL research group
- Advisor: Weinan Zhang

Southwest Jiaotong University (SWJTU) *Sep. 2015 - July. 2019*
B.S. in Computer Science and Technology
- Overall GPA: 3.84/4.0 Ranking: 1/98
- Key Lab of Cloud Computing and Intelligent Technology
- Advisor: Tianrui Li

PUBLICATIONS / PREPRINTS

Curriculum Offline Imitation Learning.
Minghuan Liu, Hanye Zhao, Zhengyu Yang, Jian Shen, Weinan Zhang, Li Zhao, Tie-Yan Liu.
The 35th Conference on Neural Information Processing Systems. **NeurIPS 2021**.
- We propose curriculum offline imitation learning (COIL), a simple and practical imitation learning based method for offline reinforcement learning. COIL utilizes an experience picking strategy for imitating from adaptive neighboring policies with a higher return, and improves the current policy along curriculum stages.

Learning to Build High-fidelity and Robust Environment Models.
Weinan Zhang, Zhengyu Yang, Jian Shen, **Minghuan Liu**, Yimin Huang, Xing Zhang, Ruiming Tang, Zhenguo Li.
The 20th European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases. **ECML-PKDD 2021**.
- We propose robust learning to simulate (RL2S), a new problem of RL which focuses on learning a high-fidelity environment simulator for serving diverse downstream tasks; we further transform RL2S as a novel robust imitation learning problem and propose efficient algorithms to solve it.

MapGo: Model-Assisted Policy Optimization for Goal-Oriented Tasks.
Menghui Zhu*, **Minghuan Liu***, Jian Shen, Zhicheng Zhang, Sheng Chen, Weinan Zhang, Deheng Ye, Yong Yu, Qiang Fu, Wei Yang. (*Equal Contribution)
The 30th International Joint Conference on Artificial Intelligence. **IJCAI 2021**.
- We propose MapGo, a model-based framework for goal-oriented RL which involves a novel relabeling stretegy FGI and a model-based training module UMPO.

Energy-Based Imitation Learining.
Minghuan Liu, Tairan He, Minkai Xu, Weinan Zhang.
The 20th International Conference on Autonomous Agents and Multiagent Systems. **Oral**. **AAMAS 2021**.
- We propose EBIL, a two-step solution for imitation learning: first estimate the energy of expert's occupancy measure, and then take the energy to construct a surrogate reward function as a guidance for the agent to learn the desired policy.

Multi-Agent Interactions Modeling with Correlated Policies.
Minghuan Liu, Ming Zhou, Weinan Zhang, Yuzheng Zhuang, Jun Wang, Wulong Liu, Yong Yu.
The 8th International Conference on Learning Representations. **ICLR 2020**.

- We propose CoDAIL, which cast the multi-agent interactions modeling problem into a multi-agent imitation learning framework with explicit modeling of correlated policies by approximating opponents' policies.

Generative adversarial exploration for reinforcement learning.
Weijun Hong, Menghui Zhu, **Minghuan Liu**, Weinan Zhang, Ming Zhou, Yong Yu, Peng Sun.
Proceedings of the First International Conference on Distributed Artificial Intelligence. **DAI 2020**.
- We propose GAE, a method to encourage exploration in RL via introducing an intrinsic reward output from a generative adversarial network, which can be seen as the confidence to judge a novel state.

Automatic Proofreading in Chinese: Detect and Correct Spelling Errors in Character-level with Deep Neural Networks.
Qiufeng Wang, **Minghuan Liu**, Weijia Zhang, Yuhang Guo and Tianrui Li.
The 8th CCF International Conference on Natural Language Processing and Chinese Computing. **NLPCC 2019**.
- We propose an LSTM based framework to solve the automatic proofreading in Chinese.

AWARDS & HONORS

TOP 6, Finalist of Sports Analytics Challenge (sponsored by PSG) *2019*

TOP 10, SCADA Data Missing Repair Competition *2019*

TOP 3, AI Challenger 2018 in Weather Forecasting *2018*

National First Prize, China Undergraduate Mathematical Contest in Modeling *2017*

Meritorious Winner, Mathematical Contest In Modeling *2017*

China National Scholarship × 2 (1%) *2016&2017*

Tang Lixin Scholarship (1‰) *2017*

IBM Scholarship (1‰) *2017*

Special Grade Comprehensive Scholarship × 4 (1%) *2016 - 2018*

SKILLS

Machine Learning: Pytorch, Tensorflow, Scikit-Learn, lightGBM

Programming Languages: Python, MATLAB, C / C++, Java, JavaScript

Standard Tests: CET-6(574), CET4(616)

Hobbies and Interests: Soccer, Swimming