

# MINGHUAN LIU

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## EDUCATION

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### 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

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### Curriculum Offline Imitation Learning.

Minghuan Liu, Hanye Zhao, Weinan Zhang, Zhengyu Yang, Jian Shen.

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 strategy FGI and a model-based training module UMPO.

### Energy-Based Imitation Learning.

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**

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<b>TOP 6, Finalist of Sports Analytics Challenge (sponsored by PSG)</b>	<i>2019</i>
<b>TOP 10, SCADA Data Missing Repair Competition</b>	<i>2019</i>
<b>TOP 3, AI Challenger 2018 in Weather Forecasting</b>	<i>2018</i>
<b>National First Prize, China Undergraduate Mathematical Contest in Modeling</b>	<i>2017</i>
<b>Meritorious Winner, Mathematical Contest In Modeling</b>	<i>2017</i>
<b>China National Scholarship <math>\times 2</math> (1%)</b>	<i>2016 &amp; 2017</i>
<b>Tang Lixin Scholarship (1‰)</b>	<i>2017</i>
<b>IBM Scholarship (1‰)</b>	<i>2017</i>
<b>Special Grade Comprehensive Scholarship <math>\times 4</math> (1%)</b>	<i>2016 - 2018</i>

## **SKILLS**

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**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