Weizhe Chen

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Education

Shanghai Jiao Tong University *Shanghai, China*

Honors Bachelor of Computer Science *Sep 2017 - PRESENT*

- Member of ACM class in SJTU, which is an elite CS program for 5 % talented student.
- I have a broad interest in artificial intelligence, especially in machine learning, reinforcement learning, multi-agent reinforcement learning, game theory, AI for social good.
- GPA: 89.5/100, ranking: 10/46.

Publications

Data-Driven Multimodal Patrol Planning for Anti-poaching *IAAI-2021*

- **Weizhe Chen**, Weinan Zhang, Duo Liu, Weiping Liu, Xiaojun Shi, Fei Fang.

Bi-level Actor-Critic for Multi-agent Coordination (pdf) *AAAI 2020 Oral*

- Haifeng Zhang, **Weizhe Chen**, Zeren Huang, Minne Li, Yaodong Yang, Weinan Zhang, and Jun Wang. Bi-level actor-critic for multi-agent coordination. In AAAI, volume 34, pages 7325–7332, 2020.

When to Follow the Tip: Security Games with Strategic Informants (pdf) *IJCAI-PRICAI 2020*

- Weiran Shen, **Weizhe Chen**, Taoan Huang, Rohit Singh, and Fei Fang. When to follow the tip: Security games with strategic informants. In Christian Bessiere, editor, Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence, IJCAI-20, pages 371–377. International Joint Conferences on Artificial Intelligence Organization, 7 2020. Main track.

Working Papers

Approximated Temporal-Induced Neural Self-Play for Stochastic Bayesian Games

Submitted to AAMAS-2021

- **Weizhe Chen***, Zihan Zhou*, Yi Wu, Fei Fang.

Research Experience

Approximated Temporal-Induced Neural Self-Play for Stochastic Bayesian Games

Advised by Prof.Fei Fang (Carnegie Mellon University), Prof.Yi Wu (Tsinghua University)

- Proposed a temporal-induced reinforcement learning based algorithm to approximate perfect Bayesian Nash equilibriums (PBNEs) in stochastic Bayesian game with one-sided incomplete information and finite horizon.
- Generalized our algorithm to a general temporal-induction paradigm that can be combined with other game-solving techniques, e.g., counterfactual regret minimization.
- Used experiments to show that our method can lead to strategy profiles that are close to PBNEs in general-sum games and is more scalable than current methods which is typically mathematical programming.

When to Follow the Tip: Security Games with Strategic Informants

Advised by Prof.Fei Fang (Carnegie Mellon University)

- This project is about introduced a new player – a strategic informant, who can observe and report upcoming attacks – to the defender-attacker security game setting, and analyze the strategy in this setting.
- Implemented the algorithms and conducted all the experiments.

Data-Driven Multimodal Patrol Planning for Anti-poaching

Advised by Prof.Fei Fang (Carnegie Mellon University)

- Showed that by analyzing satellite images and using historical patrol data, we are able to use modern machine learning methods to predict the poaching threat in a very good way.
- Proposed a novel mixed-integer linear programming-based approach to optimize multimodal patrol routes for a mix of driving and foot patrols.
- Prediction deployed in Jilin Huangnihe National Nature Reserve in Northeast China in December 2019, the rangers got much better result than historical record. And Prepared to deploy in more areas in 2020.

Bi-level Actor-Critic for Multi-agent Coordination

Advised by Prof.Yong Yu, Prof.Weinan Zhang (Shanghai Jiao Tong University), Prof.Jun Wang (University College London)

- Proposed to consider Stackelberg equilibrium as a potential better convergence result than Nash equilibrium in terms of Pareto superiority.
- Formally defined the problem of solving Stackelberg equilibrium as 'Bi-level reinforcement learning' (Bi-RL) problem and proposed an algorithm called 'Bi-level Actor Critic' (Bi-AC) to solve the Bi-RL problem.
- Did a converge analysis of our Bi-AC algorithm that showed our algorithm can converge under some specific assumptions.
- Showed that the proposed Bi-AC algorithm successfully converged to the Stackelberg equilibria in matrix games and find a asymmetric solution in a highway merge environment.

Talks

Bi-level Actor-Critic for Multi-agent Coordination *DAI-2020*

Originally published on AAAI-2020 *Oct. 2020*

- Presented as accepted papers from sister conferences.

Honors and Awards

Rong Chang Innovation Scholarship

A reward for top 0.5% student in SJTU *2019*

Team Member of Programming Contest Team Quasar

- Silver medal, 15th place in 'The 2018 CCPC final'.
- Gold medal, 2nd place in 'The 2018 ICPC Asia Nakhon Pathom Regional Contest'.
- Gold medal, 12th place in '2018 ICPC China Qingdao Provincial Programming Contest'.
- Gold medal, 4th place in '2018 CCPC Guilin Provincial Programming Contest'.

Team Member of Programming Contest Team Blazar

- Gold medal, 6th place in '2017 CCPC QinHuangDao Regional Contest'.
- Silver medal, 5th place in '2017 ACM-ICPC Asia-Manila Regional Contest'.

Zhiyaun Honors Scholarship

A reward for top 5% student in SJTU *2017, 2018, 2019*

Teaching Experience

College Programming Contest Team of Shanghai Jiao Tong University

Student Co-coach *Spring, Fall 2019*

Machine Learning course (CS420) in Shanghai Jiao Tong University

Teaching Assistant *Spring 2020*

Skills

ML framework Proficient in Tensorflow, Pytorch, Keras

English ability TOEFL-iBT:108 (Reading:30, Listening:28,Speaking:23,Writing:27)