

Xinrun Wang

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Research Interests

Game Theory, Multi-Agent Systems, Multi-Agent Reinforcement Learning.

Education

Nanyang Technological University, Singapore 2015 - 2020
Ph.D, School of Computer Science and Engineering
Supervisor: Prof. Bo An

Dalian University of Technology 2011 - 2015
Bachelor of Science, School of Physics and Optoelectronic Technology

Research Experiences

Research Assistant Professor Oct. 2021 - Present
Agent Mediated Intelligence (Prof. Bo An) **Nanyang Technological University, Singapore**

Research Fellow May. 2020 - Sep. 2021
Agent Mediated Intelligence (Prof. Bo An) **Nanyang Technological University, Singapore**

Research Assistant Aug. 2019 - Apr. 2020
Agent Mediated Intelligence (Prof. Bo An) **Nanyang Technological University, Singapore**

Visiting Scholar Jul. 2018 - Sep. 2018
USC CAIS (Prof. Milind Tambe) **University of Southern California**

Preprints

(* indicates equal contribution, ⁺ indicates corresponding author)

- [1]. **Xinrun Wang**, Jakub Cerny, Shuxin Li, Chang Yang, Zhuyun Yin, Hau Chan, and Bo An. A unified perspective on deep equilibrium finding. arXiv preprint arXiv:2204.04930 (2022).
- [2]. Pengdeng Li, **Xinrun Wang**⁺, Runsheng Yu, Bo An. Transition-informed reinforcement learning for large-scale Stackelberg mean-field games. *Submitted to IJCAI 2023*.
- [3]. Shuxin Li, **Xinrun Wang**⁺, Jakub Cerny, Youzhi Zhang, Hau Chan, Bo An. Offline equilibrium finding. arXiv preprint arXiv:2207.05285 (2022). *Submitted to ICML 2023*.

- [4]. Aye Phyu Phyu Aung, **Xinrun Wang**[†], Hau Chan, Bo An, Senthilnath Jayavelu, Xiaoli Li. DONAS: Double oracle and neural architecture search for adversarial machine learning. *Submitted to ICCV 2023*.
- [5]. **Xinrun Wang**, Chongyang Gao, Chang Yang, Shuxin Li, Youzhi Zhang, Bo An. Game-theoretic machine learning. *Ongoing Work*.

Selected Publications

(* indicates equal contribution, [†] indicates corresponding author)

- [1]. Shuo Sun, Molei Qin, **Xinrun Wang**[†], Bo An[†]. PRUDEX-Compass: Towards systematic evaluation of reinforcement learning in financial markets. *Transactions on Machine Learning Research (TMLR)*, 2023
- [2]. Runsheng Yu, Weiyu Chen, **Xinrun Wang**, James Kwok. Enhancing meta learning via multi-objective soft improvement functions. *The 11th International Conference on Learning Representations (ICLR)*, 2023.
- [3]. Pengdeng Li, **Xinrun Wang**[†], Shuxin Li, Hau Chan, Bo An. Population-size-Aware Policy Optimization for Mean-Field Games. *The 11th International Conference on Learning Representations (ICLR)*, 2023.
- [4]. Shuxin Li, **Xinrun Wang**[†], Youzhi Zhang[†], Wanqi Xue, Jakub Cerny, Bo An. Solving large-scale pursuit-evasion games using pre-trained strategies. *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI)*, accepted, 2023.
- [5]. Aye Phyu Phyu Aung*, **Xinrun Wang**^{*†}, Runsheng Yu*, Bo An[†], Senthilnath Jayavelu, Xiaoli Li[†]. DO-GAN: A double oracle framework for generative adversarial networks. *Proceedings of the 2022 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 11275-11284, 2022.
- [6]. Wei Qiu, **Xinrun Wang**, Runsheng Yu, Rundong Wang, Xu He, Bo An, Svetlana Obraztsova, Zinovi Rabinovich. RMIX: Learning risk-sensitive policies for cooperative reinforcement learning agents. *Proceedings of the 35th Annual Conference on Neural Information Processing Systems (NeurIPS)*, pp. 23049-23062, 2021.
- [7]. Yanchen Deng, Runsheng Yu, **Xinrun Wang**, Bo An. Neural regret matching for distributed constraint optimization problems. *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 146-153, 2021.
- [8]. Shuxin Li, Youzhi Zhang*, **Xinrun Wang**^{*}, Wanqi Xue, Bo An. CFR-MIX: Solving imperfect information extensive-form games with combinatorial action space. *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 3663-3669, 2021.
- [9]. Wanqi Xue, Youzhi Zhang, Shuxin Li, **Xinrun Wang**, Bo An, Chai Kiat Yeo. Solving large-scale extensive-form network security games via neural fictitious self-play. *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 3713-3720, 2021.

- [10]. Aye Phyu Phyu Aung, **Xinrun Wang**, Bo An, Xiaoli Li. We mind your well-being: Preventing depression in uncertain social networks by sequential interventions. *Proceedings of the 30th International Conference on Automated Planning and Scheduling (ICAPS)*, pp. 499-507, 2020.
- [11]. Zhenyu Shi*, Runsheng Yu*, **Xinrun Wang***, Rundong Wang, Youzhi Zhang, Hanjiang Lai, Bo An. Learning expensive coordination: An event-based deep RL approach. *Proceedings of the 2020 International Conference on Learning Representations (ICLR)*, 2020.
- [12]. **Xinrun Wang**, Milind Tambe, Branislav Bosansky, Bo An. When players affect target values: Modeling and solving dynamic partially observable security games. *Proceedings of the 10th Conference on Decision and Game Theory for Security (GameSec)*, pp. 542-562, 2019. (Outstanding Student Paper Award)
- [13]. **Xinrun Wang**, Bo An, Hau Chan. Who should pay the cost: A game-theoretic model for government subsidized investments to improve national cybersecurity. *Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI)*, pp. 6020-6027, 2019.
- [14]. **Xinrun Wang**, Bo An, Martin Strobel and Fookwai Kong. Catching Captain Jack: Efficient time and space dependent patrols to combat oil-siphoning in international waters. *Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI)*, pp. 208-215, 2018.
- [15]. **Xinrun Wang**, Qingyu Guo and Bo An. Stop nuclear smuggling through efficient container inspection. *Proceedings of the 16th International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, pp. 669-677, 2017.

Awards

Outstanding Student Paper Award	<i>GameSec, 2019</i>
National Scholarship	<i>China, 2013</i>
National Encouragement Scholarship	<i>China, 2012</i>

References (available upon request)

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