YANG CHEN

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EDUCATION

The University of Auckland — Auckland, New Zealand
Ph.D. in Computer Science — *November 2018 – April 2022*

· Supervisors: Jiamou Liu and Bakhadyr Khoussainov

· Thesis: *From One to Infinity: New Algorithms for Reinforcement Learning and Inverse Reinforcement Learning* (submitted in September 2021)

The University of Auckland — Auckland, New Zealand
First Class Honours in Computer Science — *July 2017 – July 2018*

· Dissertation: *Network Building: Methodological Foundations and Algorithmic Analysis*

Beijing Institute of Technology — Beijing, China
Bsc in Computer Science & Technology — *August 2013 – June 2017*

WORK EXPERIENCE

The University of Auckland — Auckland, New Zealand
Research Fellow — *June 2021 – Present*

· I am currently a research fellow affiliated with the School of Computer Science at The University of Auckland.

DAMO Academy, Alibaba — Beijing, China
Research Intern — *September 2020 – January 2021*

· I served as a principal contributor and programmer of a research project. I proposed a novel framework that combines deep learning and bandit techniques to enhance the efficiency and accuracy of the recommender system. The performance bound was derived using statistical learning tools. The paper has been published, and a prototype is ready to be deployed to support the online business.

RESEARCH INTERESTS

My research interests span a spectrum of reinforcement learning, multi-agent systems and game theory. Recently, I have aimed to solve issues modelled as multi-agent systems from reinforcement learning and game-theoretic perspectives. Along this line, my ultimate goal is to reinforce the insights into theories of applying reinforcement learning in conjunction with game theory. Lately, my focus has moved to reinforcement learning in games with massive agents. I attempt to explore exciting results in such scenarios by combining reinforcement learning and the mean-field theory. In addition to my research interests in reinforcement learning, game theory and multi-agent systems, I am also working on applying reinforcement learning in natural language processing and automatic reasoning.

SUPERVISION

BSc (Honours) Students

· **Yiwei Qi**
The University of Auckland. *February 2022 – November 2022 (expected)*
Topic: *Building A Game-Playing Agent Using Decision Theory*

Ph.D. Students

· **Libo Zhang (mentoring)**
The University of Auckland. *November 2021 – Present*
Topic: *Learning Equilibria in Multi-player Games*

TEACHING

· **COMPSCI 761: Advanced Topics in Artificial Intelligence**
Lecturer, The University of Auckland. *Semester 2, 2022*
· **COMPSCI 220: Algorithms and Data Structures**
Guest Lecturer, The University of Auckland. *Semester 1, 2022*
· **COMPSCI 399 Capstone: Computer Science**
Project Supervisor, The University of Auckland. *Semester 2, 2021*

ACADEMIC SERVICES

· **Conference Reviewer:** ICNLP 2022, BSCI 2022.
· **Journal Reviewer:** Social Network Analysis and Mining (SNAM).
· **Web Master:** AAMAS 2022, BSCI 2022, BSCI 2021, BSCI 2020

AWARDS

· AAMAS 2022 Scholarship *April 2022*
· Google Global PhD Fellowship Nomination (Austrilia & New Zealand) *August 2020*
· Best Paper Award, BSCI 2019. *July 2019*
· Summer Scholarship Funding from PDH Research Partnership. *November 2018*
· University of Auckland Doctoral Scholarship. *October 2018*

SELECTED PUBLICATIONS

• Reinforcement Learning, Multi-agent Systems & Game Theory

· **Individual-Level Inverse Reinforcement Learning for Mean Field Games**
Yang Chen, Libo Zhang, Jiamou Liu, Shuyue Hu. *The 21st International Conference on Autonomous Agents and Multi-agent Systems.* **AAMAS 2022.** (Core A*)
· **Interconnected Neural Linear Contextual Bandits with Upper Confidence Bound Exploration**
Yang Chen, Miao Xie, Jiamou Liu, Kaiqi Zhao. *26th Pacific-Asia Conference on Knowledge Discovery and Data Mining.* **PAKDD 2022.** (Core A)

· **Adversarial Inverse Reinforcement Learning for Mean Field Games**
Yang Chen, Libo Zhang, Jiamou Liu, Zhenyun Deng, Neset Özkan Tan, Michael Witbrock. **arXiv 2021.**

· **Social Capital Games as A Framework for Social Structural Pattern Emergence**
Yang Chen, Jiamou Liu. *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining.* **ASONAM 2020.**

· **Social Structure Emergence: A Multi-agent Reinforcement Learning Framework for Relationship Building**
Yang Chen, Jiamou Liu, He Zhao, Hongyi Su. *The 19th International Conference on Autonomous Agents and Multi-agent Systems.* **AAMAS 2020.** (Core A*)

· **Can Reinforcement Learning Enhance Social Capital?**
He Zhao, Hongyi Su, **Yang Chen**, Jiamou Liu, Bo Yan, Hong Zheng. *The International Workshop on Web Information Systems in the Era of AI.* **2019**.

· **A Reinforcement Learning Approach to Gaining Social Capital with Partial Observation**
He Zhao, Hongyi Su, **Yang Chen**, Jiamou Liu, Hong Zheng, Bo Yan. *The 16th Pacific Rim International Conference on Artificial Intelligence.* **PRICAI 2019.** (Core A)

• Multi-agent Systems & Graph Theory

· **Distributed Community Detection over Blockchain Networks Based on Structural Entropy**
Yang Chen, Jiamou Liu. *The 2019 ACM International Symposium on Blockchain and Secure Critical Infrastructure.* **BSCI 2019.** **(Best Paper Award)**

· **Becoming Gatekeepers Together with Allies: Collaborative Brokerage over Social Networks**
Yang Chen, Jiamou Liu. *The 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining.* **ASONAM 2019.**

· **Dynamic Relationship Building: Exploitation Versus Exploration on a Social Network**
Bo Yan, **Yang Chen**, Jiamou Liu. *The 18th International Conference on Web Information Systems Engineering.* **WISE 2017.**

• Reasoning in Natural Language Processing

· **Prompt-based Conservation Learning for Multi-hop Question Answering.**
Zhenyun Deng, Yonghua Zhu, **Yang Chen**, Qianqian Qi, Michael Witbrock, Patricia Riddle. *The 29th International Conference on Computational Linguistics.* **COLING 2022.** (Core A)

· **Interpretable AMR-Based Question Decomposition for Multi-hop Question Answering.**
Zhenyun Deng, Yonghua Zhu, **Yang Chen**, Michael Witbrock, Patricia Riddle. *The 31st International Joint Conference on Artificial Intelligence.* **IJCAI 2022.** (Core A*)

· **An explainability analysis of a sentiment prediction task using a transformer-based attention filter**
Neset Özkan Tan, Joshua Bensemann, Diana Benavides-Prado, **Yang Chen**, Mark Gahegan, Lia Lee, Alex Yuxuan Peng, Patricia Riddle, Michael Witbrock. *The Ninth Annual Conference on Advances in Cognitive Systems.* **ACS 2021.**