

YANG CHEN

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EDUCATION

The University of Auckland

Ph.D. in Computer Science

Auckland, New Zealand

November 2018 – April 2022

- Supervisors: Jiamou Liu and Bakh Khoussainov
- Thesis: *From One to Infinity: New Algorithms for Reinforcement Learning and Inverse Reinforcement Learning (submitted in September 2021)*

The University of Auckland

First Class Honours in Computer Science

Auckland, New Zealand

July 2017 – July 2018

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

Beijing Institute of Technology

Bsc in Computer Science & Technology

Beijing, China

August 2013 – June 2017

WORK EXPERIENCE

The University of Auckland

Research Fellow

Auckland, New Zealand

June 2021 – Present

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

Alibaba DAMO Academy

Research Intern

Beijing, China

September 2020 – January 2021

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

RESEARCH INTERESTS

My research interests span a spectrum of reinforcement learning, computational game theory and multi-agent systems. So far, I have had a publication record in prestigious venues, such as IJCAI and AAMAS. Recently, I aim to solve issues modelled as multi-agent systems from the learning-theoretic and game-theoretic perspectives. Along this line, my ultimate goal is to reinforce the insights into theories of applying game theory in conjunction with reinforcement learning. Very 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 the research interest in game theory and multi-agent systems, I am also working on applying reinforcement learning in natural language processing and automatic reasoning.

SUPERVISION

Honours Students

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

TEACHING

- **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).

AWARDS

- AAMAS 2022 Scholarship *April 2022*
- Google Global PhD Fellowship Nomination (Australilia & 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

• GAME THEORY & GAME-THEORETIC LEARNING

- **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 UCB 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, Michael Witbrock, Jiamou Liu. *arXiv 2021.*

• GRAPH THEORY & MULTI-AGENT SYSTEMS

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

• REASONING & NATURAL LANGUAGE PROCESSING

- **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.*
- **Eye Gaze and Self-attention: How Humans and Transformers Attend Words in Sentences**
Joshua Bensemann, Alex Yuxuan Peng, Diana Benavides-Prado, Yang Chen, Neset Özkan Tan, Paul Michael Corballis, Patricia Riddle, and Michael Witbrock. *Cognitive Modeling and Computational Linguistics. CMCL 2022.*