

# Yuming Chen

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## EDUCATION BACKGROUND

University of Birmingham, Birmingham, U.K.

Sept. 2023 - Jun. 2024

Project: MSc. Artificial Intelligence & Machine Learning

School: School of Engineering and Physical Sciences

University of Chinese Academy of Social Sciences, Beijing, China

Sept. 2017 - Jun. 2022

Major: Economics

School: School of Economics

Overall GPA: 3.59 / 4

Thesis: Research on Approximability of Equilibria in Pure Exchange Economy with Atomic Traders

## RESEARCH EXPERIENCES

### Research Internship

Mar. 2022 - Jul. 2023

Deep Reinforcement Learning Research Group, the State Key Laboratory for Management and Control of Complex Systems, Institute of Automation, Chinese Academy of Sciences.

- ❖ Designed a module to represent opponent's policy in Multi-Agent System (MAS) via contrastive learning. Agent with such module reached equilibria with higher social welfare in social dilemmas, and outperformed M-FOS (Chris Lu et al., ICML'22) and LOLA (J. Foerster et al., AAMAS'18). It is accepted by 2023 International Conference on Neural Information Processing (ICONIP'23).
- ❖ Assisted to design an algorithm for decentralized rescue drones to collaborate with each other. Such drones were totally controlled via Reinforcement Learning with a hierarchical architecture. I used reward shaping to avoid shifting from the original high-level goal, and reward randomization to learn diversified policies.

## Research Interests

- ❖ **Multi-Agent Reinforcement Learning:**
  - Ad hoc collaboration in diversified tasks
  - Few-shot / Zero-shot adaptation to diversified partners
- ❖ **Game Theory:**
  - Game decomposition into zero-sum games and potential games
  - Open ended-learning with recursive reasoning in general-sum games

## Publications

Yuming C., Yuanheng, Z. "Policy Representation Opponent Shaping via Contrastive Learning"

Accepted by the International Conference on Neural Information Processing (ICONIP2023), to appear.

Dapei Z., Ying K., Yuming C. "Research on Duopoly Non-cooperative Game Model under the Conditions of Supply Surplus"

Published in Contemporary Economic Research (indexed by CSSCI) in Jul. 2021 [[Link \(in Chinese\)](#)]