YUTONG YIN

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EDUCATION

Peking University Beijing, China
B.E. in Artificial Intelligence, Yuanpei College | GPA: 3.65/4.0 *Sept 9/2019 – July 7/2023*

PUBLICATIONS

Z Duan, J Tang, Y Yin, Z Feng, X Yan, M Zaheer, X Deng. "A Context-Integrated Transformer-Based Neural Network for Auction Design". In *Proceedings of the 39th International Conference on Machine Learning, 2022.*

RESEARCH EXPERIENCE

Northwestern University (Department of Industrial Engineering and Management Sciences) and Yale University (Department of Statistics and Data Science) Evanston, USA / New Haven, USA
Research Assistant to Professor Zhaoran Wang (Northwestern) and Professor Zhuoran Yang (Yale) *Oct 2022 – Present*
Mean Field Imitation Learning (Leaded by me)

- Designed an efficient imitation learning algorithm for the Mckean-Vlasov Games in order to successfully predict the dynamics of groups with large populations.
- Theoretically proved and established that the sample complexity of our algorithm is lower than existing works.
- Preparing for the submission to the ICML in 2023.

University College London (UCL Centre for Artificial Intelligence) London, UK
Visiting Summer Intern instructed by Professor Jun Wang *May 2022 – Oct 2022*
Stackelberg Mean Field Game (Leaded by me)

- Defined the mean field Stackelberg Nash Equilibrium as a constraint optimization problem and subsequently used the implicit function to solve it.
- The performance of our model was better than the existing works in the toy examples.

Peking University (Center on Frontiers of Computing Studies) Beijing, China
Research Assistant to Professor Xiaotie Deng *Sept 2021 – March 2022*
CITransNet for Auction Design (I am the third author):

- Proposed a context-integrated transformer-based neural network for optimal auction design. Our model maintained permutation-equivariance over bids and contexts while being able to find asymmetric solutions.
- Accepted by the ICML in 2022.

SKILLS & OTHERS

Computer Skills & Advanced knowledge

- C++, Python, Latex | Pytorch, TensorFlow, Git and CUDA.
- Machine Learning theory and applications | Algorithmic Game Theory.

English Skills

- GRE 324 | TOEFL 107.

Interests

- Basketball (The starter of the college basketball team. Top four in PKU cup).

PERSONAL STATEMENT

I am a senior student from the Peking University, and I anticipate obtaining my Bachelor's Degree during the course of 2023. My research interests are strongly focused on the topic of machine learning theory and the application of machine learning in fields such as game theory, multi-agent system and mechanism design. After finishing several different ML projects on reinforcement learning and mechanism design with Prof. Xiaotie Deng's group, I have already equipped myself with extensive and comprehensive AI programming experience. During my summer research project on the topic of Stackelberg Mean Field Game in Prof. Jun Wang's lab, I consolidated my understanding of game theory and further gained knowledge of how to deal with the learning problems of large populations. At this moment in time, I am working with Prof. Zhaoran Wang and Prof. Zhuoran Yang in an attempt to solve the Mean Field Imitation Learning problem. We have come up with an efficient algorithm with outstanding sample complexity bound.