ZUN LI

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EDUCATION

University of Michigan, Ann Arbor *Sept. 2018 - Now*
Ph.D. in Computer Science and Engineering
Advisor: Prof. Michael P. Wellman
Research: Computational Game Theory and Artificial Intelligence

Shanghai Jiao Tong University *Sept. 2014 - June 2018*
B.S.E. in Computer Science (IEEE Honored Class)
Advisor: Prof. Fan Wu & Prof. Zhenzhe Zheng
Research: Ad Auctions and Mechanism Design

INTEREST AREAS

- Computational Economics, *e.g.*, computational game theory, auction theory, network economics
- Artificial Intelligence, *e.g.* multiagent systems, game-tree search, statistical learning, deep learning, reinforcement learning, evolutionary computation, probabilistic graphical models
- Applications, *e.g.* computational advertising, recommender systems, game-playing AI, trading

RESEARCH PAPERS

Conference Publications

[5] **Zun Li**, Feiran Jia, Aditya Mate, Shahin Jabbari, Mithun Chakraborty, Milind Tambe, Yevgeniy Vorobeychik,"Solving Structured Hierarchical Games Using Differential Backward Induction", *Thirty-Eighth Conference on Uncertainty in Artificial Intelligence (UAI)*, Netherland, 2022

[4] **Zun Li**, Michael P. Wellman,"Evolution Strategies for Approximate Solution of Bayesian Games", *Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, Virtual Online, 2021

[3] **Zun Li**, Michael P. Wellman,"Structure Learning for Approximate Solution of Many-Player Games", *Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, New York, 2020

[2] Steven Jecmen, Arunesh Sinha, **Zun Li**, Long Tran-Thanh, "Bounding Regret in Empirical Games", *Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI)*, New York, 2020

[1] **Zun Li**, Zhenzhe Zheng, Fan Wu, Guihai Chen, "On Designing Optimal Data Purchasing Strategies for Online Ad Auctions", *Seventeenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Stockholm, 2018

Journal Publications

[1] Qinya Li, **Zun Li**, Zhenzhe Zheng, Fan Wu, Shaojie Tang, Zhao Zhang, Guihai Chen, "Capitalize Your Data: Optimal Selling Mechanisms for IoT Data Exchange", *IEEE Transactions on Mobile Computing*, DOI: 10.1109/TMC.2021.3113387, 2021

Manuscripts

[1] Feiran Jia, Aditya Mate, **Zun Li**, Shahin Jabbari, Mithun Chakraborty, Milind Tambe, Michael P. Wellman, Yevgeniy Vorobeychik,"A Game-Theoretic Approach for Hierarchical Policy-Making", *In Submission*

RESEARCH EXPERIENCE

Equilibrium Computation in Structured Black-Box Games *April 2019 - Present*
Research Assistant at Strategic Reasoning Group, UMich *Advisor: Prof. Michael P. Wellman*

· Considered the problem of solving complex games given only black-box access to payoff values.
· For solving many-player games of complete-information, designed an unsupervised learning styled algorithm for fitting games with symmetry, and a greedy search algorithm for learning games with sparsity

· Implemented two numerical Nash-solving algorithms: L-BFGS-B for symmetric games, and homotopy method for graphical games
· For solving many-player games of incomplete information, formulated the problem of computing pure equilibria as a bi-level neural optimization problem
· Designed algorithms by combing evolutionary computation, deep learning, double-oracle and other techniques for solving both pure and mixed equilibria
· Discovered that the method can recover known analytical solutions in economic games

Data Acquisition in Ad Auctions *Aug. 2016 - Sept. 2017*
Researcher Assistant at Advanced Network Lab, SJTU *Advisor: Prof. Fan Wu*

· Formulated the optimal data acquisition problem in sponsored search auctions as a two-stage game
· Derived conditions for the uniqueness and symmetry of the equilibria using convex optimization theory and payoff equivalence principle in auction theory

WORKING EXPERIENCE

Buyside Analysis & Optimization in Google Display Ad Auction *Jun. 2021 - Aug. 2021*
Software Engineer Intern, PhD, Google Inc. *Core Google Display Ad Team*

· Built and productionized a C++ pipeline using Google Flume framework and GoogleTest to generate advertisers' change history data in the order of 100GB
· Designed and implemented a complex analysis workflow linking GoogleSQL scripts and Python data analysis frameworks to analyze advertiser's exclusion behavior in Google Display Ad Auction
· Analyzed possible features including CTR, CVR, spend-ratio distributions and language match ratio and determined threshold values to explain advertisers' behavioral pattern
· Built a random forest classifier to classify high/low exclusion websites incorporating identified features

HONORS & REWARDS

Finalist, Automated Negotiation Agent Competition, Oneshot Track@SCM League *2021*
Student Travel Scholarship *AAAI 2020, AAMAS 2018*
Meritorious Winners (Top 15% Worldwide), International Mathematical Contest in Modeling *2016*
First Class Prize (Top 2% Provincial Level), National Undergraduate Physics Contest *2015*

PROFESSIONAL SERVICE

Program Committee : AAAI'21, 22, AAMAS-GAIW'21, 22

TEACHING EXPERIENCE

Graduate Student Instructor: EECS 592@UMich, AI Foundations, Fall'21

PROGRAMMING SKILLS

• Languages: Python, C++, Go, Java, LISP • Tools: Mathematica

COURSEWORK

EECS 545: Machine Learning
EECS 586: Algorithms
EECS 598: Quantum Computation
EECS 598: Reinforcement Learning
EECS 591: Distributed Systems
MATH 558: Nonlinear ODE
EECS 692: Advanced AI
CMPLXSYS 535: Networks
EECS 598: Artificial General Intelligence