

# Jiawei Ge

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## EDUCATION

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**School of Mathematics, Fudan University, China**

Sep 2017 - Jul 2021

B.S. in Applied Mathematics

**Overall GPA: 3.81/4.0 Ranking: 4/176 Major GPA: 3.93/4.0 Ranking: Top 2%**

**GRE Mathematics: 910, 96%**

Core Courses: Mathematical Analysis (A, Top 5%) / Real Analysis (Honors) (A, Top 5%) / Functional Analysis (A) /

Advanced Algebra(A, 5/100) / Abstract Algebra (A) / Topology (A) / Ordinary Differential Equations (A, Top 5%)

/Analytic Geometry (A) / Differential Geometry(A) / College physics(A) / Probability (A) / Python(A)

**School of Mathematics, NC State University, United State**

Jan 2020 - May 2020

Core Courses: Financial Mathematics (A+, graduate level) / Applied Differentiable Equation (A+) / Introduction to Applied

Mathematics (A+) / MATLAB (A+) / R (A)

## RESEARCH EXPERIENCES

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**Online Actor-Critic Algorithm** | Northwestern University | Research Assistant

Jul 2020 – May 2021

Advisor: Zhaoran Wang, Assistant Professor of Industrial Engineering and Management Sciences, Northwestern University.

- Proposed a novel online actor-critic algorithm with generalized linear function approximation.
- Proved that our algorithm achieved a sublinear regret..

**Fairness in Multi-Agent Reinforcement Learning** | Northwestern University | Research Assistant

Feb 2020 - Jul 2020

Advisor: Zhaoran Wang, Assistant Professor of Industrial Engineering and Management Sciences, Northwestern University.

- Incorporated fairness into multi-agent reinforcement learning by maximizing a social welfare function and utilized the Legendre-Fenchel transformation that transforms the maximization problem into a primal-dual optimization problem.
- Proposed the fair multi-agent proximal policy optimization algorithm (FARMPPPO) that solves the primal-dual optimization problem.
- Characterized the convergence and global optimality of our algorithm.
- Proposed the updates of FARMPPPO under various commonly used social welfare functions, including Max-Min social welfare function, Foster's welfare function, and proportional fairness.

**Exploring Alpha from Job Posting Data** | Fudan University | Research Assistant

Jul 2019 - Sep 2019

Advisor: Jing Wu, Assistant Professor at Department of Decision Sciences and Economics, Chinese University of Hong Kong

- Analyzed job posting data from 2581 firms and 312,451 job vacancies; demonstrated the overall skill trends and fads.
- Built more than 50 single factors including growth factors, momentum factors, and labor-related factors.
- Ran backtesting to evaluate annual return, IC decay, IR and drawdown of each factor.
- Selected 16 factors based on the backtesting results, calculated correlations between factors, and drew heatmaps.
- Evaluated combined performance using AdaBoost model.
- Wrote a detailed report on the methods we used to explore new sources of alpha from job posting data.

## PUBLICATION

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**Jiawei Ge, Lingxiao Wang, Zhuoran Yang, Zhaoran Wang, "Probably Efficient Fairness-Aware Policy Optimization for Multi-Agent Reinforcement Learning", 15<sup>th</sup> Women in Machine Learning Workshop (WiML 2020).**

## WORKING EXPERIENCES

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**CITICS (Citic Securities )** | China Office | **Customer Manager** | Dalian

Aug 2019 - Sep 2019

- Participated in market sharing conference.
- Systematically learned about security and the products.
- Completed a presentation about stock selection.

## AWARD

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- National Scholarship, Ministry of Education (**most prestigious scholarship for Chinese undergraduates, 2/176**) 2018
- Major Award (6/176) 2019
- Scholarship for Excellent Academic Performances (**Top 5%**) 2018&2019
- Outstanding Student (**based on comprehensive quality, Top 5%**) 2018&2019&2020

## **LEADERSHIP AND ACTIVITIES**

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**Student Union**, School of Mathematics | member

Sep 2017 - Sep 2018

- Leader of Wujiaochang Mathematics Class.
- Recruited over 30 volunteers and consulted with community leaders.
- Completed an 8000-word work report.

**Advanced Algebra Seminar**

Sep 2017 - Jun 2018

- Completed two lectures on the factor space and the tensor space.
- Awarded the distinction of excellent student.

**Matrix Calculation Seminar**

Sep 2018 - Dec 2018

- Completed a lecture on the tensor decomposition.

## **SKILLS**

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Programming Languages: Python, MATLAB, R, LATEX, Maple

Standardized English Tests: TOEFL 104 (Reading 29, Listening 28, Speaking 23, Writing 24)

GRE Verbal: 154 Quantitative: 170 Analytical Writing: 3.5