

# JIMIN LIN

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## EDUCATION

<b>Ph.D. in Statistics and Applied Probability</b> , <i>Chancellor's Fellowship</i> University of California, Santa Barbara <i>Advisor: Jean-Pierre Fouque, Nils Detering</i> <i>Award: Bloomberg Quantitative Finance Ph.D. Fellowship 2022-2023</i>	Expected 2023 Santa Barbara, CA
<b>M.S. in Computational Finance and Risk Management</b> University of Washington	Dec 2018 Seattle, WA
<b>B.S. in Finance</b> , <i>magna cum laude</i> Southwestern University of Finance and Economics	June 2017 Chengdu, China
<b>SDSC Summer Institute in Cyberinfrastructure-Enabled Machine Learning</b> University of California, San Diego	Summer 2022 San Diego, CA
<b>IMSI Program in Distributed Solutions to Complex Societal Problems</b> , <i>NSF Grant</i> University of Chicago	Fall 2021 Chicago, IL
<b>Erasmus Program in Business Engineering</b> , <i>Exchange Student Fellowship</i> University of Liège	Spring 2017 Liège, Belgium

## ACADEMIC

<b>Reinforcement Learning for Intra-and-Inter-Bank Borrowing and Lending Mean Field Control Game</b> , <i>ICAIF'22 Best Paper Award</i> , with A. Angiuli, N. Detering, J.-P. Fouque, and M. Laurière	2022
<ul style="list-style-type: none"><li>Proposed a MFCG model for the intra-and-inter-bank borrowing and lending problem.</li><li>Studied the impact of the three-timescale, action exploration heuristics, and the convergence of RL algorithm.</li></ul>	
<b>Reinforcement Learning Algorithm for Mixed Mean Field Control Games</b> , <i>on arXiv</i> , with A. Angiuli, N. Detering, J.-P. Fouque, and M. Laurière	2022
<ul style="list-style-type: none"><li>Raised a new model for competitions between large number of large groups with coordinated players.</li><li>Designed an unified three-timescale Q-learning algorithm to solve MFG, MFC, and MFCG problems.</li></ul>	
<b>Percolation in Random Graphs of Unbounded Rank</b> , <i>on arXiv</i> , with N. Detering	2022
<ul style="list-style-type: none"><li>Derived percolation in random graphs with functional fixed point method and differential equations.</li><li>Designed both Monte Carlo method and neural network approach to simulate and solve the percolation.</li></ul>	
<b>On Carr and Lee's Correlation Immunization Strategy</b> , <i>Applied Mathematical Finance</i> , with M. Lorig	2019
<ul style="list-style-type: none"><li>Built a robust model to price and hedge derivatives written on the quadratic variation of a risky asset.</li><li>Affirmed model effectiveness with Monte Carlo experiment on the Heston model.</li></ul>	
<b>Solving Mean Field Cyber-security Model with Reinforcement Learning</b>	Spring 2021
<ul style="list-style-type: none"><li>Applied Q-learning to find the measure flow fixpoint of a Markovian mean field game with finite states.</li><li>Compared learning result with numerical result from solving HJB equation and Fokker-Planck equation.</li></ul>	
<b>Home Credit Default Prediction with Supervised Learning</b>	Fall 2020
<ul style="list-style-type: none"><li>Instructed two undergrads to analyze a 2GB dataset with PySpark and output an interactive report with Jupyter.</li><li>Performed data cleaning, feature engineering, and supervised learning to predict credit default risk.</li></ul>	
<b>Epidemic Simulation with Exponential Random Graph Model</b>	Winter 2020
<ul style="list-style-type: none"><li>Characterized a real social network with Markov Chain Monte Carlo on a exponential random graph.</li></ul>	

- Experimented three epidemic models on simulated social networks to study contagion processes.

### **The Quadrant Probabilities of Paired Financial Time Series**, on SSRN

Spring 2018

- Evaluated inter-asset co-movements and conducted empirical studies with numerical simulations.

### **Stochastic Programming for Pension Fund Management**

Fall 2017

- Implemented the dynamic programming framework to model a multistage pension investment.
- Generated various market scenarios with Monte Carlo simulation to optimize investment strategy.

## **PROFESSION**

### **Quantitative Researcher - CTO Office**

June 2021 - Present

Bloomberg. *Mentor: Bruno Dupire*

New York, NY

- Researched on calibration methods for stochastic local volatility and approximation for correlation matrix.
- Developed TensorFlow neural network structure for solving partial differential equations to price derivatives.
- Cooperated in a Jupyter-IPyWidgets-based market data visualization project and develop interactive templates.
- Investigated visualization libraries, such as plotly and bokeh, and contrasted them with bqplot.

### **Teaching Assistant**

Jan 2020 - Present

University of California, Santa Barbara

Santa Barbara, CA

- Mentored undergraduate student research projects in mean field game and path-dependent volatility model.
- Taught undergraduate and graduate level courses on Probability and Statistics, Statistic Modeling, Time Series Analysis, Stochastic Process, Machine Learning, SAS Programming, etc.

### **Quantitative Researcher**

Apr 2019 - Aug 2019

Hony Capital

Hong Kong, China

- Launched a real-time evaluation system to backtest performances of 3,272 security analysts on Asian market.
- Synchronized the system with the backend SQL database of the company's mobile application for investors.
- Backtested and evaluated 10+ analyst-driven trading strategies with a hedge fund manager.

### **Quantitative Analyst**

June 2018 - Mar 2019

Kavout Corporation

Seattle, WA

- Established a Python package for financial data processing, asset management, and portfolio backtesting.
- Studied 40+ investment strategies by backtesting and paper trading on the interactive broker platform.
- Productized three portfolio strategies, designed and distributed one-pagers with a marketing manager.

### **Quantitative Analyst Intern**

July 2017 - Aug 2017

Bopu Asset Management

Shanghai, China

- Reproduced and verified two option arbitrage strategies from external financial engineering reports.
- Optimized a commodity trading strategy with quadratic programming for a fund manager.

### **Investment Analyst Intern**

July 2016 - Aug 2016

Lingqing Investment Management

Shanghai, China

- Analyzed three industries on the quantitative fund, blockchain, and big data with competitive force model.
- Performed data visualization on target companies' financial reports to facilitate investment decisions.

### **Household Finance Investigator**

Sept 2014 - Sept 2015

Survey and Research Center for China Household Finance

Chengdu, China

- Cooperated in a team of eleven to survey 216 sampled college students for 150+ types of financial statistics.
- Led a team of seven to travel interstate to interview 248 families for 300+ household financial statistics.

## **PRESENTATIONS**

SIAM FM23. June 2023. Philadelphia, PA.  
 ICAIF Conference. Nov 2022. New York, NY.  
 INFORMS Annual Meeting. Oct 2022. Indianapolis, IN.  
 CFMAR Workshop. Sept 2022. University of California. Santa Barbara, CA.  
 IMSI Workshop Flash Talk. Dec 2021. University of Chicago. Chicago, IL.  
 CFMAR Seminar. Nov 2020. University of California. Santa Barbara, CA.

## TEACHING

**University of California, Santa Barbara** (as Teaching Assistant or Reader)

PSTAT 199: Undergraduate Level Independent Studies in Statistics	Fall 2022
PSTAT 223A: Graduate Level Stochastic Calculus	Fall 2021
PSTAT 213A: Graduate Level Probability Theory and Stochastic Process	Fall 2021
MATH CS 121: Undergraduate Level Probability	Fall 2021
PSTAT 160B: Undergraduate Level Stochastic Process	Winter, Spring 2021
PSTAT 174/274: Graduate Level Time Series Analysis	Fall 2020
PSTAT 130: SAS Base Program	Summer 2020
PSTAT 131/231: Graduate Level Statistical Machine Learning	Spring 2020
PSTAT 120C: Undergraduate Level Probability and Statistics	Spring 2020
PSTAT 127: Undergraduate Level Advanced Statistical Models	Winter 2020
PSTAT 126: Undergraduate Level Regression Analysis	Winter 2020

## SKILLS AND QUALIFICATIONS

### Computer Languages

Python, R, Julia, C++  
 Mathematica, MATLAB  
 SQL, SAS  
 Bash, Git  
 LaTeX, Markdown

### Human Languages

Mandarin(Native)  
 Fukienese(Native)  
 English(Fluent)  
 French(Elementary)

### Qualifications

Deep Learning Specialization, April 2021  
 Machine Learning with Python, June 2018  
 Data Scientist with R, Dec 2017  
 SAS Advanced Programmer, June 2017  
 CFA Level I, June 2017  
 FRM, passed May 2017, chartered 2022