

AUSTIN POLLOK

Department of Data Science and Operations
Department of Finance and Business Economics
USC Marshall School of Business
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ACADEMIC POSITIONS

University of Southern California *2024 – present*
Assistant Professor of Clinical Finance and Business Economics (Joint Appointment)

University of Southern California *2022 – present*
Assistant Professor of Clinical Data Science and Operations

EDUCATION

University of Southern California *2022*
Ph.D. Applied Mathematics (defended November 2021)
Dissertation: *High-Frequency Kelly Criterion and Fat-Tails: Gambling with an Edge*
Advisor: Jianfeng Zhang
External Advisor: Christopher Jones (Finance)

University of California, Irvine *2016*
B.S. Mathematics

RESEARCH INTERESTS

- **Financial Markets, Strategies, and Products**
 - Volatility, options, and derivatives markets
 - Corporate bond and credit markets
 - Portfolio construction, derivatives-enhanced equity strategies, and ETF design
 - Trading frictions, liquidity, and execution
 - Blockchain systems and decentralized finance
- **Methods**
 - Machine learning and AI for quantitative finance
 - Deep learning, sequential modeling, and reinforcement learning
 - Statistical learning, prediction, and causal inference for financial decision-making
 - Optimization and constrained decision-making

PUBLICATIONS AND FORTHCOMING PAPERS

- “Modeling Wallet-Level Behavioral Shifts Post-FTX Collapse: An XAI-Driven GLM Study on Ethereum Transactions,” 2025, Forthcoming, **IEEE Artificial Intelligence for Business (AIB)**, with Benjamin Gillen, Rashmi Ranjan Bhuyan, and Gourab Mukherjee
- “High-Frequency Kelly Criterion and Fat-Tails: Gambling with an Edge,” **ProQuest Dissertations and Theses**, 2022, PhD Thesis
- “Kelly Criterion: From a Simple Random Walk to Lévy Processes,” **SIAM Journal of Financial Mathematics**, 2021, 12-1, 342-368, with Sergey Lototsky

- “Transient Feedback and Robust Signaling Gradients. Appendix: Feedback on Receptor Synthesis Rate,”
International Journal of Numerical Analysis and Modeling, 2016, with Frederic Y. Wan

WORKING PAPERS AND WORK IN PROGRESS

- “Predicting Realized Variance Out of Sample: Can Anything Beat The Benchmark?,” (2025), **arXiv:2506.07928**
- “High-Frequency Multivariate Sequence Modeling for Intraday S&P 500 Volatility and 0DTE Options Mispricing,” (2025), with James Chen, Mihai Cucuringu, and Christopher S. Jones
- “Nonlinear Shrinkage Estimation for High Dimensional Hidden Markov Models,” (2025), with Gourab Mukherjee
- “Alpha Term Structure in Corporate Bonds for Pricing and Hedging,” (2025), with Petter Kolm and Terry Benzschawel
- “Is the Kelly Criterion Just Another Utility Function?,” (2022), with Peter Carr

INDUSTRY EXPERIENCE

- TWG AI & Guggenheim Investments
- Critical Trading Group
- Thrackle
- Capital Group

SERVICE EXPERIENCE

Academic Journal Refereeing Ongoing
 · Frontiers of Mathematical Finance

QuantSC Faculty Advisor Fall 2024 – present
 · Faculty advisor for undergraduate RSO club, QuantSC. Worked with the E-Board to develop and implement a club restructuring program, including a new curriculum.

DSO MSBA Board of Advisors Spring 2025 – present
 · Advising the MSBA on the program’s AI transformation.

DSO MSBA Curriculum Committee Spring 2024 – present
 · Reviewing, refining, and updating curriculum for the MSBA program.

MSBA Project Coordinator Summer 2023 – present
 · Responsible for sourcing company-sponsored projects for the MSBA elective course DSO 585 Data-Driven Consulting. Companies include: Critical Trading, Thrackle, TWG AI.

Bovard’s Online MS in Analytics and AI — Course Design and Development Team *Fall 2024*

Bovard’s Online MS in Analytics and AI — Program Design Team *Summer 2024*

DSO Liaison for Bovard’s Online MS in Analytics and AI *Spring 2024 – Summer 2025*

DSO RTPC Hiring Committee *Fall 2023 – Spring 2024*

DSO Teaching Innovation Committee Fall 2023 – present

- Responsible for building industry connections with the department.

MSBA Admissions Committee

Fall 2022 – Spring 2025

Volunteer Mentor in UCI Math Community Educational Outreach (CEO) Spring 2021

- Engaged underprivileged students in Santa Ana middle schools in introductory data science, programming, and finance projects.

Organization of graduate student seminar

Fall 2019, Spring 2020

- Organized and led graduate student Python and Machine Learning seminar on a weekly basis. Going through business case studies in order for graduate students to gain the necessary skills to work in industry.

Designed upper division statistics empirical projects

Spring 2020

- Introduced empirical project to the course, individually supervised student groups assisting in implementation of project ideas.

Development and instruction of new department course

Fall 2019, Fall 2021

- Assisted in development of curriculum and teaching of a new department course, Math 499 Consulting with Data Science in Python. As an industry-sponsored course, I was responsible for maintaining strategic relationships with industry business stakeholders, resulting in numerous internship opportunities for students. This course has been adopted in the course catalog as Math 446 Machine Learning Through Python, which I also helped to develop and facilitate through customized coursework related to the De-Fi space along with a startup company project.

Undergraduate sports betting summer research

Summer 2019

- Assisted in development and daily supervision of a machine learning based sports betting research project for undergraduates.
- Mentored undergraduate students seeking to land internships in the field of quantitative finance and data science.

STUDENTS

PhD Co-advising & Committee Member

- James Chen, Department of Applied and Computational Mathematics, UCLA; Currently 3rd-year PhD student (co-advising with Mihai Cucuringu, UCLA Math Dept.)
- Benjamin Gillen, Department of Mathematics, University of Southern California; Currently 4th-year PhD student (co-advising with Gourab Mukherjee, USC DSO Dept.)
- Levon Hakobyan, Department of Mathematics, University of Southern California; Currently 5th-year PhD student (co-advising with Sergey Lototsky, USC Math Dept.)

MSBA Advising

- Jason Dormann; First Position: Data Scientist at StubHub
- Christian Ingul; First Position: AI Technology Consultant at EY
- Chris Leung; First Position: Quantitative Analyst at Bank of America
- Anthony Navarro; First Position: Data Science Manager at Sunderstorm
- Nelly Tian; First Position: Product Strategy & Growth at InstaDeep
- Tom Hultsch; First Position: Associate at Sound Point Capital Management LP
- Giovana Rezende; First Position: Financial Analyst at Microsoft
- Juan Herrera; First Position: Product Data Scientist at Ramp

- Fernando Garcia de Llano Camacho; First Position: Data Analyst at Nuvocargo
- Denisse Wohlstein; First Position: Data Analyst at Equip
- Marcus Walton; First Position: Data Scientist at Capital Group

Undergraduate Advising

- Rajvir Dua; First Position: Trader at Optiver
- Liam Morely; First Position: Trader at Bridgewater
- Jordan Marx; First Position: Investment Banking Analyst at Morgan Stanley
- Minseo Kim; First Position: Trader at FlowTraders

TALKS

- Thrackle Talk: Options Market: Pricing, Hedging, and Microstructure *Spring 2022*
- Thrackle Talk: Decentralized Exchanges *Fall 2021*
- University of Minnesota Talk: High Frequency Volatility Forecasting with Machine Learning and the Variance Risk Premium *Fall 2021*
- QWafa (Quant Society) Talk: High Frequency Kelly Criterion and Fat Tails *Summer 2021*
- UCI Math CEO Talk: Community Outreach *Summer 2021*
- UCI Math Club Talk: Faces in Mathematics *Summer 2021*
- Tala Talk: Multivariate Kelly Criterion Applied to Loan Portfolio Construction *Fall 2019*

TEACHING EXPERIENCE

USC Finance and Business Economics *2026 – present*
Instructor

- FBE 551 - Quantitative Investing: Spring 2026 (Grad. Elective)
- FBE 499 - Quantitative Investing: Spring 2026 (Undergrad. Elective)

USC Data Science and Operations Department *2022 – present*
Instructor

- DSO 464 - Deep Learning for AI and Business Applications: Spring 2024, Fall 2024, Spring 2025, Fall 2025 (Undergrad. Elective)
- DSO 585 - Data-Driven Consulting: Fall 2023 (Quantitative Volatility Trading), Spring 2024, Summer 2024, Fall 2024 (Blockchain Transaction Costs Analytics), Spring 2025, Fall 2025 (Multiple Projects) (MSBA Elective)
- DSO 559 - Intro to Python for Business Analytics: Spring 2024 (MBA Elective)
- DSO 570 - The Analytics Edge: Data, Models, and Effective Decisions: Fall 2022, Fall 2023 (MSBA Core)
- DSO 516 - Probability and Data Modeling: Spring 2023 (MSBA/MBA Elective)
- DSO 545 - Statistical Computing and Data Visualization: Summer 2022 (IBEAR MBA Elective), Fall 2024 (MSBA Core)
- DSO 459 - Business Analytics Through Python: Fall / Spring 2022, 2023, 2024 (Undergrad. Elective)
- DSO 425 - Intro to Business Analytics: Spring 2023 (Undergrad. Core)
- USC Summer Programs - Analytics, The Power of Data for Business (Co-Instructor): Summer 2024

USC Mathematics Department *2016 – present*
Teaching Assistant

- Math 114 - Intro to Statistics: Spring 2017, Fall 2018
- Math 125 - Calculus I: Fall 2016

- Math 226 - Calculus III: Fall 2017, Spring 2018, Summer 2019
- Math 408 - Mathematical Statistics: Spring 2019, Spring 2020
- Math 118 - Business Calculus: Fall 2019
- Math 499 - Consulting with Data Science in Python: Fall 2019, Spring 2022 (co-developed and co-taught course)
- Math 606 - Topics in Stochastic Processes: Understanding the Bichteler-Dellacherie Theorem: Summer 2020
- Math 541a - Mathematical Statistics: Spring 2021
- Math 606 - Singular Stochastic Differential Equations: Summer 2021
- Math 446 - Machine Learning Through Python: Fall 2021 (co-developed and co-taught course)
- Math 555 - Partial Differential Equations: Fall 2021

USC Finance and Business Economics Department

2019 – 2021

Teaching Assistant

- FBE 599 - Quantitative Investing: Fall 2019, Fall 2020, Fall 2021
- GSBA 539 - Macroeconomics: Spring 2020, Summer 2020
- GSBA 539 - Financial Markets: Summer 2020, Summer 2021, Spring 2022

AWARDS AND FELLOWSHIPS

USC Marshall School of Business

- Marshall Teaching Excellence Award (2026; one of four recipients across the entire school)
- Van Eck Digital Assets (VEDA) Initiative Research Grant - PI (Spring 2025)
- Golden Apple Award for Graduate Teaching in the MS Business Analytics Core (2024)

USC Dornsife Department of Mathematics (Graduate)

- Theodore Edward Harris Prize for Excellence in Teaching (2022)
- Dornsife Merit-Based Department Fellowship (2021)

UC Irvine Department of Mathematics (Undergraduate)

- Howard Tucker Award in Mathematics
- Track and Field Athletic Scholarship, Phi Beta Kappa, Regent's Scholarship, Mathematical Computational Biology Undergraduate REU

SKILLS

Programming & Languages: Python; $\text{\LaTeX}$; HTML

Scientific Computing & Data Analysis: NumPy, SciPy, Pandas, Matplotlib, StatsModels

Machine Learning & Deep Learning: scikit-learn, TensorFlow, Keras, PyTorch

Optimization & Mathematical Programming: CVXPY, Gurobi (Python API)

Systems, DevOps & Cloud: Linux (Bash, SSH, Git, cron), Docker (Dockerfiles, images, volumes, DockerHub), AWS (EC2, S3)