Alexander Bernstein

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: alexbstl

Education

University of California, Santa Barbara — Santa Barbara, CA
Ph.D. in Statistics — *Sept. 2025*
Dissertation: "Long-Only Minimum Variance Portfolios Composition for Factor Models"

Washington University in St. Louis — St. Louis, MO
M.Sc. in Systems Science and Applied Mathematics — *Dec. 2016*
B.A. in Mathematics and Economics (Cum Laude) — *May 2014*

Research Interests

My research interests include **convex and portfolio optimization**, factor models and feature construction, asset pricing (options and bonds), multivariate statistics, time-series analysis, probability and stochastic analysis, and applications of machine learning in financial mathematics.

Publications and Working Papers

Banerjee, T., **Bernstein, A.**, Feinstein, Z., (2025). "Dynamic clearing and contagion in financial networks". *European Journal of Operational Research* 321.2, pp. 664–675.
Bernstein, A., Shkolnik, A., (2025). "Asymptotics of Quadratic Forms on a Simplex". In Preparation.

Talks and Presentations

Analytical Solutions To The Constrained Markowitz Problem Via Fixed Point Theory
INFORMS Annual Meeting, Phoenix, AZ — *Oct. 2023*

Explicit Solutions for Position Constrained Minimum Variance Portfolios
SIAM Conference on Applied and Computational Discrete Algorithms, Online Poster — *July 2021*
CDAR Risk Seminar, UC Berkeley, Berkeley, CA — *March 2020*

Teaching

University of California, Santa Barbara — Santa Barbara, CA
Teaching Assistant — *Sept. 2017 – March 2025*

- PSTAT 173: Risk Theory (Undergraduate)
- PSTAT 170: Introduction to Financial Mathematics (Undergraduate)
- PSTAT 160AB: Applied Stochastic Processes (Undergraduate)
- PSTAT 174/274: Time Series Analysis (Cross-listed Undergraduate / Graduate)
- PSTAT 126: Regression Analysis (Undergraduate)
- PSTAT 120AB: Probability and Mathematical Statistics (Undergraduate)
- PSTAT 5A/109: Introduction to Statistics (Undergraduate)

Graduate Student Mentor — *Dec. 2019 – June 2024*

- Supervised undergraduate projects in Financial Mathematics and Optimization.
- Guided students in preparing posters and reports.

Professional Experience

Epic Systems Madison, WI
Technical Services Engineer *Sept. 2014 – Sept. 2015*

- Supported customers in the usage of their Electronic Medical Records system
- Diagnosed customer requests and tailored software to fit their needs
- Developed and implemented improvements to the Epic Codebase

Prozess Technologie St. Louis, MO
Intern *May 2013 – May 2014*

- Created computational simulations to explore effectiveness of laboratory equipment
- Tested, calibrated, and validated laboratory equipment used in pharmaceutical manufacturing

Fellowships and Awards

Regents Fellowship, *UC Santa Barbara* *2017-2018*

John M. Olin Prize for Excellence in Economics, *Washington University in St. Louis* *2014*

Skills

Technical Knowledge

- Expertise in Convex Optimization and Statistical Analysis
- Strong knowledge of Mathematical Statistics, Probability, Stochastic Analysis, Machine Learning, Time Series Analysis, Data Science, Options Pricing, and Risk Analysis

Programming Languages and Software

- Strong Knowledge: R, Matlab, Python, NumPy, SciPy, Scikit-Learn, Pandas, LaTeX, Markdown, Linux
- Working Knowledge: PyTorch, C, Java, JavaScript, NodeJS, SQL, MongoDB, AWS, Git, Intersystems Caché

REFERENCES AVAILABLE UPON REQUEST