Jason Bohne

Department of Applied Mathematics and Statistics · Stony Brook University, Stony Brook, NY, 11794
jason.bohne@stonybrook.edu | jasonbohne123.github.io | jasonbohne123 | jasonbohne822

Education

Stony Brook University *Stony Brook, NY*

PH.D. IN APPLIED MATHEMATICS AND STATISTICS *August 2021 - May 2026*

- Working within the Quantitative Finance Group
- Advisor: Prof. Pawel Polak, Department of Applied Mathematics and Statistics

M.SC. IN APPLIED MATHEMATICS AND STATISTICS *August 2021 - December 2022*

- Quantitative Finance Track, GPA: 3.9/4.0
- Concentration in Statistical Learning, Nonparametric Regression, Optimization

University of Illinois at Chicago *Chicago, IL*

B.SC. IN MATHEMATICS *August 2018 - May 2021*

- Honors College Graduate, GPA: 4.0/4.0
- Thesis: An Analysis of Derivative Pricing Methods
- Advisor: Prof. Jie Yang, Department of Mathematics
- Concentration in Linear Algebra, Numerical Analysis, Differential Equations

Professional Experience

Bloomberg Technology *New York City, NY*

CTO OFFICE INTERN *May 2023 - Present*

- Develop adaptive trend filtering models to estimate high-frequency price processes with exogenous covariates.
- Construct regret-minimizing algorithms to learn model parameters in the above bilevel hyperparameter optimization.
- Incorporate the derived estimates in downstream market-impact tasks to improve the out-of-sample performance.

Proprietary Trading Firm *New York City, NY*

QUANTITATIVE RESEARCHER *December 2021 - August 2022*

- Designed a machine learning pipeline for data preprocessing and feature generation.
- Constructed a derivatives pricing and risk management engine for inventory risk.
- Developed a short-term price trend and volatility model to determine quoting policies.

Alpaca Securities *San Francisco, CA*

CONTENT RESEARCH *July 2020 - July 2021*

- Created REST API tutorials on algorithmic trading strategies and market data access.
- Hosted community conferences and webinars which attracted over 250 attendees.

Publications

TECHNICAL REPORTS

Statistical Inference of Hidden Markov Models on High-Frequency Quote Data. **Jason Bohne.** 2022.

Multiple Kernel Learning on the Limit Order Book. **Jason Bohne**, Jarryd Sculley, Paul Vespe. 2022.

Mean-Variance Optimization using Elastic Net Penalty. **Jason Bohne**, Jarryd Sculley. 2022.

Presentations

Jason Bohne, Pawel Polak, Gary Kazantsev, David Rosenberg. 2023. Trend Filtering for Time Series Segmentation. Bloomberg Summer Internship Presentation, Bloomberg New York.

Jason Bohne, Pawel Polak. 2023. Adaptive Trend Filtering of High-Frequency Price Processes with Exogenous Covariates. Bloomberg-Columbia Machine Learning in Finance Workshop, Columbia University.

Jason Bohne. 2022. Statistical Inference of Hidden Markov Models on High-Frequency Quote Data. Applied Mathematics and Statistics Department, Stony Brook University.

Jason Bohne, Jarryd Sculley, Paul Vespe. 2022. Multiple Kernel Learning on the Limit Order Book. Applied Mathematics and Statistics Department, Stony Brook University.

Jason Bohne, Jarryd Sculley. 2022. Mean-Variance Optimization using Elastic Net Penalty. Applied Mathematics and Statistics Department, Stony Brook University.

Jason Bohne. 2021. An Analysis of Derivative Pricing Methods. Honor's College Research and Impact Conference, University of Illinois at Chicago.

Research Experience

High-Frequency Research Group at Stony Brook University *Stony Brook, NY*

Advisor: Prof. Pawel Polak *June 2022 - Present*

- Designed an efficient clickhouse database for over 20TB of high-frequency trade and quote data.
- Constructed and distributed client-side scripts in Python for programmatic access to the database.
- Implemented machine learning pipelines for data preprocessing, feature generation, and model training.
- Increased membership of the group to 10 students through recruitment of new graduate students.

Polymath Summer REU at Yale University *New Haven, CT*

Advisor: Prof. Pat Devlin *June 2020 - August 2020*

- Computed the hat guessing number for distinct classes of cyclic graphs.
- Provided bounds on the hat guessing number for complete graphs.

Teaching Experience

2024 **Capital Markets and Portfolio Theory**, Co-Instructor with Prof. Robert Frey
2023 **Foundation of Quantitative Finance** , Lead Teaching Assistant for Prof. Robert Frey
2023 **Computational Data Analysis** , Content Development Assistant for Prof. Pawel Polak
2023 **Capital Markets and Portfolio Theory**, Lead Teaching Assistant for Prof. Robert Frey
2022 **Foundation of Quantitative Finance** , Lead Teaching Assistant for Prof. Robert Frey
2022 **Applied Mathematics in Modern Technology**, Lead Teaching Assistant for Prof. Matt Reuter
2021 **Applied Mathematics in Modern Technology**, Lead Teaching Assistant for Prof. Matt Reuter

Honors and Awards

2020 **Victor Twersky Mathematics Scholarship**, University of Illinois at Chicago
2020 **Yeuk-Lam Yau-Leung Memorial Scholarship**, University of Illinois at Chicago

Outreach & Professional Development

Affiliations and Service

2024 **CEWIT at Stony Brook Hackathon**, Team Mentor
2023 **Institute for Advanced Computational Science**, Research Affiliation
2023 **Curriculum Vitae and Academic Website Tips by SIAM**, Event Lead
2023 **COMAP MCM/ICM Challenge**, Undergraduate Team Advisor
2023 **SIAM Stony Brook Chapter**, Technical Lead and Board Member
2018 - 2021 **Quantitative Trading Club**, Cofounder and President

Competitions

2021 **Traders at MIT**, Student Team for University of Illinois at Chicago
2021 **Berkley Trading Competition**, Student Team for University of Illinois at Chicago
2021 **COMAP's Mathematical Modeling Challenge**, Successful Participant

Skills

Programming Languages
Python, R, Bash

Machine Learning
PyTorch, HuggingFace, Keras, Scikit-Learn, SciPy, NumPy, Numba

Developer Tools
Git, Docker, SQL, Clickhouse, Spark, Kubernetes