STEVEN UN

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OBJECTIVE

Applied mathematician specializing in stochastic analysis seeking graduate-level internship in quantitative risk analysis in Summer 2025

EDUCATION

Ph.D. Mathematics | December 2025
The University of Iowa | Iowa City, IA, United States

M.S. Mathematics | May 2023
The University of Iowa | Iowa City, IA, United States

B.A. Mathematics, Minor Economics | May 2019
Rutgers University- New Brunswick | Piscataway, NJ, United States

TECHNICAL SKILLS

Mathematical Skills

- **Stochastic calculus**, partial differential equations, numerical linear algebra, mathematical probability, measure theory, real analysis, dynamical systems

Statistical Skills

- **Statistical inference theory**, discrete-state stochastic processes, applied machine learning

Computing Skills

- **C++** (**STL**), Python (Numpy, Pandas, Scikit-Learn, SciPy, PyTorch), MATLAB

Other Relevant Coursework

- Econometrics (linear regression models, time-series analysis), financial economics, macroeconomics
- Physics- upper-division mechanics and electricity/magnetism

COMMUNICATION SKILLS

Oral and written technical communication, explain technical concepts to non-technical audiences, expository lecture skills

RELEVANT PROJECTS

American Double-Barrier Put Options with Stochastic Barriers Under Uncertain Volatility Model
November 2023 to Present

- Developing the mathematics of American double-barrier put option pricing with stochastic barriers under uncertain volatility model using stochastic control theory (dynamic programming, viscosity solutions, and optimal stopping theory (free-boundary problems, backward stochastic differential equations).

WORK EXPERIENCE

Computational Science Research Intern | Synclesis
Champaign, IL | May 2024- August 2024

- Utilized high-dimensional inference methods to optimize and statistically analyze the evaluation of computationally expensive functions arising in circuit-simulator design.
- Analyzed and synthesized current research literature on surrogate modeling techniques, Gaussian processes, and polynomial chaos to propose solutions and build working prototypes in PyTorch and C++

Data Science Trainee | Internship Network in the Mathematical Sciences (INMAS), 2023-2034 Cohort

- Engaged with Ph.D. student participants in technical workshops on computer programming, statistical methods, machine learning. Engaged in professional development workshops
- Implemented from scratch Bayesian classifier, logistic regression classifier, neural network models for handwritten digit recognition in Python (Numpy, PyTorch).
- Implemented robust matrix class from scratch in C++ using only STL vector. Currently developing implementation of column-pivoted LU-decomposition and other numerical linear algebra algorithms
- Implemented custom quadrature class from scratch in C++ for numerical integration using functional programming techniques

Graduate Teaching Assistant | Department of Mathematics | The University of Iowa

Iowa City, IA | January 2021 to Present

- **Stochastic Finance- Assistant Instructor**
  Provided effective and engaging instruction in mathematics of risk-neutral pricing for stochastic finance course for students in M.S. Finance, M.S. Business Analytics, actuarial science. Emphasized probabilistic foundations. Held weekly office hours, graded written course exams
- **Real Analysis- Assistant Instructor**
  Trained undergraduate mathematics majors to read, understand, and construct proper mathematical arguments in upper-division real analysis course. Delivered engaging and accessible lectures, evaluated student proof-writing proficiency, held weekly office hours
- College Algebra, Elementary Functions- Main Instructor

Room Attendant | Iowa House Hotel
Iowa City, IA | June 2023- Aug 2023

- Provided punctual and courteous customer service. Cleaned hotel guest rooms

Construction Estimator | Sloan and Company
Mountain Lakes, NJ | June 2019- November 2020

- Analyzed rough construction documents to produce competitive project bids for acoustical ceiling contractor. Detailed work under time pressure

Supplemental Instructor | Office for Diversity and Academic Success in the Sciences| Rutgers University- New Brunswick
Piscataway, NJ | September 2018- May 2019

- Designed and taught supplemental calculus course to support undergraduate science majors from underrepresented backgrounds

INTERESTS

Bloomberg Markets, f(Q) The Fancy Quant (Quant Finance Blog), QuantStart , Numerical Computing