ARIC CUTULI

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EDUCATION

Columbia University — New York, NY
M.S. Financial Engineering — Sep 2022 - Dec 2023
GPA: 3.7/4.0
Topics: Stochastic Calculus, Convex Optimization, Time Series Analysis, Monte Carlo Simulation, Trading Systems
PhD Coursework: Math of Deep Learning

University of California, Los Angeles — Los Angeles, CA
B.S. Mathematics/Economics, *Specialization in Computing* — Sep 2019 - Jun 2022
GPA: 3.9/4.0
Topics: Real Analysis, Probability Theory, Frequentist Statistics, Econometrics, Numerical Methods, Algorithms

TECHNICAL SKILLS

- Programming: Python, Go, C++
- Other Software: Excel, Jira, LaTex

WORK EXPERIENCE

Citigroup — New York, NY
Quantitative Summer Analyst *(Incoming)* — Jun 2023 - Aug 2023
Quantitative Summer Analyst, *Markets Innovation* — Jun 2022 - Aug 2022
- Produced an event arbitrage trading tool by denoising news data with NLP (BERT) in Python with PyTorch and HuggingFace
- Evaluated a crude oil trading strategy with an out-of-sample Sharpe ratio of 2.18 vs 0.79 benchmark over a bullish 6 month period
- Improved model robustness via grid search of hyperparameters

Vicarisi Ventures — Remote
Quantitative Developer — Dec 2021 - Jun 2022
- Engineered trading bots for RIAs and brokerages in collaboration with a small, student-led start-up
- Created Python and Go class files to price derivatives, compute Greeks, and measure the VIX for use in mean reversion strategies

Edelman Financial Engines — Santa Clara, CA
Data Analyst Intern, *Fiduciary Quality Assurance* — Jun 2021 - Aug 2021
- Identified key issues in fiduciary performance with frequentist statistics and data visuals in Jira and Excel
- Proposed a standardized incident reporting protocol, prompting the hiring of staff to facilitate its implementation

RESEARCH EXPERIENCE

Columbia University — New York, NY
Research Assistant, *Probabilistic Modeling* — Feb 2023 - Present
- Bayesian hierarchical modeling and machine learning to explore the driving factors of global migration and develop improved probabilistic projections of bilateral migration flows
- Research conducted in the Columbia Climate School under the joint supervision of Prof. Upmanu Lall and Dr. Michael Puma

AbleMarkets — Remote
Research Assistant, *Decentralized Finance* — Dec 2021 - Mar 2022
- Developed a cohesive survey of ~40 academic papers concerning the design of automated market makers

UCLA Department of Mathematics — Los Angeles, CA
Directed Reading Program Mentee, *Hawkes Processes in Finance* — Sep 2021 - Jan 2022
- Held weekly discussions with a mathematics PhD candidate about graduate-level research topics
- Delivered a 15 minute talk on the modeling power of Hawkes processes in financial markets

TEACHING EXPERIENCE

Columbia University — New York, NY
Teaching Assistant, *Algorithmic Trading* — Jan 2023 - Present
- Field questions, conduct office hours, and review and debug Python code for graduate level course

PERSONAL PROJECTS

Trading in the Limit Order Book with CNN-LSTM Alpha — Jan 2022 - Jul 2022
- Implemented a hybrid deep learning model in Python with Keras to forecast order book mid price changes at an intra-second frequency
- Integrated model uncertainty to strategically size positions, leading to stable PnL relative to the naive trading rule
- Estimated autoregressive component of order book with statsmodels, in effect incorporating an approach not taken in the literature