Pranav Ahluwalia

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PROFESSIONAL EXPERIENCE

Quantitative Research Intern, Acadian Asset Management | May 2022 - Aug 2022 | Boston, MA

- Added a liquidity interaction to an in-house equity risk model (based on a distributed legendre polynomial regression)
- Researched the relationship of various risk-factors to returns under the new model
- Ran attribution studies to assess the impact of factor-tilts on multiple global portfolios

Quantitative Research Intern, Arch Capital Management | Jan 2022 - May 2022 | Boston, MA

- Arch Capital is a stat arb equities fund (weekly holding periods) founded by an ex-Tudor senior portfolio manager
- Researched pairs trading strategies using various statistical techniques (i.e. distance, co-integration)
- Conducted portfolio optimization research for tactical asset allocation strategies

Software Engineer Co-op, Acadia | Sep 2020 - Dec 2020 | Norwell, MA

- Designed software infrastructure for OTC derivatives risk management using Python and SQL
- Leveraged numerical algorithms to automate cleaning of data containing peer-metrics/exposure/risk
- Reduced margin call latency by 15% to boost client-side performance

Software Engineer Intern, Dell Technologies | Jun 2020 - Jul 2020 | Hopkinton, MA

- Constructed a cyber threat intelligence dashboard using Python and Flask
- Mapped 1m+ cybersecurity risks to company assets to assess stress scenarios (probabilistically)
- Designed an algorithm to rank cybersecurity risks based on expected losses

Cyber Security, MITRE | May 2018 - Aug 2018 (Intern), Jul 2019 - Dec 2019 (Co-op) | Bedford, MA

- Developed software (Python) that parsed linux command logs into a scalable elastic search database
- Coded a markov model to sample user commands; improved detection of malicious behavior by 40%
- Performed cluster analysis on 500k executables to find factors that lead to security breaches
- Engineered an interactive visualization suite to process live radar signal data using R and Shiny

Research Mentorship Program, UCSB Statistics Department | Jun 2016 - Jul 2016 | Santa Barbara, CA

- Co-authored research paper on ARIMA trading strategies and time series analysis
- 6 week summer mentorship program under the guidance of a PhD student in probability theory

EDUCATION

MS Applied Mathematics, Northeastern University | Sep 2022 - Dec 2023 | Boston, MA
BS Computer Science and Mathematics, Northeastern University | Sep 2017 - May 2022 | Boston, MA
SAT: 2170; Math SAT Level 2: 800

PROJECTS

Statistical Arbitrage Lab (StatArbLab)

- Built a modular python library implementing distance, co-integration and kalman filter techniques for pairs trading
- Wrote a fast, vectorized backtester with customizable fee structures

Markov Chain Behavior of Volatility Index

- Wrote a Markov model in Python and trained it on a standardized VIX time series
- Compared empirical state occupation frequencies to the stationary distribution of the derived Markov chain
- Used chi-square to compare two-step transition frequencies of the markov chain to that of the time series

TECH SKILLS: Python (Pandas/NumPy), R, SQL, C++, Java, Git, Bash, Machine Learning, Econometrics, Regressions