Alexander Hahn

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EDUCATION

- **Cornell University**   Ithaca, New York
  Bachelors - Mathematical Physics   *September 2010 - May 2014*

SKILLS SUMMARY

- **Languages**:   R, Haskell, Python, Bash/Unix Commandline tools/ scripting, Ocaml, Scala, SQL/kdb
- **Technical**:   Emacs, Linux, Git/Travis, Tmux, AWS (S3, EC2, Batch, CloudWatch), MOSEK, Docker, Vim, nix, IntelliJ
- **Quantitative**:   Statistical Modeling, Quantitative Trading (Execution), Portfolio Construction/Analysis (constrained optimization), Data Processing, Forecasting, Scientific Computing with Linear & Non-linear Numerical Methods

EXPERIENCE

- **Bot Lab LP (Schonfeld external hedge fund)**   New York, NY
  Associate Quantitative Portfolio Manager/ Quant Trader   *April 2019 - Present*
  - **Overview**: Joined a Citadel quant portfolio manager and Stanford CS PhD to build a quantitive hedge fund exclusive to Schonfeld Strategic Advisors. Order of 100MM's initial allocation.
  - **Platform contributions**:
    - **Trading Interface** - worked with our infrastructure engineer to implement our Live Trading Interface. Traded over 12 billion USD via 4 execution brokers over the last 3 years across ~ 4000 unique publically traded US Equities. The command line tool fetches aws s3 portfolio data on our (hopefully) overnight pre-calculated target positions, computes a suit of portfolio level stats for review then upon manual confirmation submits the orders algorithmically across several execution brokers. I have sole responsibility for a final review of each of Bot Lab's trading baskets and submission to the execution brokers.
    - **Simulation and Backtest Evaluation** - worked alongside the head PM to implement a robust backtest (Python, Haskell, various evaluations and visualizations in R). In short, this would take historical predictions of returns (alpha) as input, as well as portfolio construction parameters, and generate holdings overtime via our portfolio construction algorithm. Main evaluation metrics were around: returns/performance, risk analysis, predictive power/ translation to return, costs (spreads, commissions, borrow rates), volumes, etc. Git Insights reports that I've contributed >50k lines of code to the platform since inception.
  - **Research/ Strategy improvements:** :
    - **Alpha** - Design and analysis of predictions across 5 thematic buckets: Market Data, Fundamental, Sentiment, Microstructure, and Cross Asset. I determined what frequencies our alphas were best at predicting and incorporated that info into pc/trading to boost performance. This resulted in a three window daily trading model greatly increasing our monetization rate at the trade off of higher trading volumes. Similarly, I implemented and automated many studies to identify asymmetries in the predications and portfolios to then reincorporated back into the pipeline.
    - **CBOE Options Example** - Performed initial analysis of the CBOE trial data set in R. Upon determining that data set was worth incorporating into our signals I wrote the file ingestion, parsing, and cleaning code in python, then calculated contract level statistics including, contract greeks, implied vol, implied price, open interest, volumes etc. From there I wrote the aggregation functions into symbol level statistics (features) that our alpha would use and fit on. Regressing the Options signal on the master signal (vs other signals) this sub alpha accounts for roughly 20% of our overall predictive power. This is a decently outsized contribution given there are $\sim$10 signals overall.
    - **Risk Modeling and Portfolio Construction**: Worked with the head PM to construct and implement the portfolio mathematics to pass our predictions into specialized conic optimization software. Reduced risk by modeling new market phenomena (designing factors on Elections, Covid, China, Russia/Ukraine, etc.) and passing them into the optimization software as a constraint to bound exposure to. Additionally, I ran many portfolio simulations to analyse and fine tune our portfolio construction process, especially in cases where anything upstream (alpha, data, etc) changed.

- **Bridgewater Associates**   Glendinning/Westport, CT
  Investment Engineer & Production Integration Engineer   *Dec 2016 - March 2019*
  - **Macro Economic Model Updates**: Systemized Volume, Open Interest, and Greek Estimates of Brazilian options/futures contracts into Bridgewater's Data and Backtesting platform. Previously the system was a mixture of Excel and manual bloomberg data entry. I overhauled of the system to improve and port the logic into Bridgewater's Scala based production platform.
  - **Production Integration Engineer - Team Lead**: Lead a team of six Engineers to assist the Research Department in utilizing Bridgewater's main Backtesting/Signal Generation Platform (Lightspeed), and diagnostic tools (Fusion - advanced UI charting tool). Supported Production Modules and operations team in running live/ production issues. Supported Researchers' various use cases and implementations of logic into the platform. Added functionality to the Investement Engineer/Associate userfacing API as needed.

- **Nomura**   New York, NY
  Technology Analyst   *August 2014 - November 2016*
  - **Automation and Support of Structured Products**: Worked on a team to systemize Nomura's Equity Linked Bond business enabling the growth of the book. Helped implement the STP (straight through processing) of notes from issuance to expiration (or redemption). This included pricing/valuation, periodic coupon/ payment analysis, risk analysis / hedging (index and dynamic). Worked alongside a trader and desk quant to help support the growth of the portfolio to 24 large notional Notes with tenors varying from 1-10 years.
  - **Security Master**: Supported Nomura's Reference database. Rationalized and help maintain consistency between numerous security identifiers.