# 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 manager, 3 person team)** New York, NY
  *Associate Quantitative Portfolio Manager/ Quant Trader* *April 2019 - Present*
  - **Initial Platform Build ∼ 2019 to 2020 from IMA to live trading**:
    • Assisted in developing and deploying the initial strategy: Alongside the head PM, a former Citadel Stat Arb Quant, I helped analyse and improve our core stable of alphas, portfolio construction (MOSEK), backtest/simulation, execution algos, and was involved with setting up our infrastructure needs to support the live strategy and research environment.
    • Initial allocation of 100MM to deploy a US Equities, L/S market and factor neutral, mid frequency (∼1 day holding period), stat arb portfolio. Additional ability to scale/ grow the book upon hitting performance metrics.
    • Integration of Bot Lab's platform with external partners: Schonfeld's file based OMS, Prime brokers (securities financing, locates, holdings), Execution Brokers, Back Office, and Data Vendors.
    • Contributed >50K lines of Haskell/python across 200 (squashed/independent/PRs) commits to master across all parts of strategy pipeline according to the GitHub insights page on our main platform repo. Contributed >34K lines of R to our Research environment (various studies and analysis).
  - **Alpha Contribution - 2019 to Present**:
    • Worked with our head quant pm to build characteristic portfolios for the individual ∼12 alphas, then fit with a hierarchical regression procedure to form a master signal. After studying and improving the purely linear characteristic portfolios, I helped implement and tune realistic constrained portfolios at the sub signal and master signal level.
    • Alpha's spanned across 5 thematic buckets: Fundamental, Sentiment, Microstructure, Market Data (TAQ), and Cross Asset. Measured wrt the raw return residualized to barra's USE4S/USFAST factor model plus some custom factors.
    • Master signal had a 3% IC (daily) in-sample, 2% out-of-sample, and 2.5% Live trading IC. Roughly 100 features per signal fit with MOSEK's highly regularized linear fitters (Elastic Net).
  - **Portfolio Construction - 2019 to Present**:
    • Initial evaluation and encoding of constraints (Bot Lab's + Schonfeld limits) into MOSEK's interior point solution to maximize risk adjusted multiperiod returns.
    • Live PC runs a tighter 9:1 allocation of idio to factor exante risk with slight but non impactful decay expost.
    • Evaluation and feedback into PC of: monetization rate, alpha allocation/ holdings exposure to alpha, awareness/ improvements of TCA (cost) models after quarterly reviews with execution brokers (fraction of spread paid, temporary/permanent impact, etc).
  - **Trading and Execution - 2020 to present**:
    • Traded over 12 Billion USD via 4 execution brokers over the last 3 years. Determined allocation between brokers/algos.
    • Helped develop our "one touch" automated trading CLI and have final responsibility on reviewing and approving each basket before we send to execution brokers.
    • Reduced spread costs via open and close auction participation, identifying asymmytries in GICS groupings/quantile groupings across various dimensions and either updating our trading algos (static schedule) or feeding back into PC.
- **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.