Algorithmic Trading in Quantopian

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Trading Strategy: Mean-Variance Portfolio Optimized

Methodology:

Part 1: Python

1) Pulled in all named stocks in S&P 500
2) Analyzed monthly returns from 2015 through 2017
3) Chose ten companies that maximized mean monthly returns from 2015 through 2017
4) Ran 5,000 simulations with various weights on these ten companies to assess portfolio performance
5) Chose portfolio that optimized Sharpe Ratio across the 5,000 simulations

Part 2: Quantopian

6) Back-tested performance against benchmark (SPY ETF) from 2018 through 2019

Performance:

- Return
  - Optimized portfolio: 3.31% ($10,000 -> $10,331)
  - Benchmark (SPY): -4.51% ($10,000 -> $9,549)
- Alpha
  - Optimized portfolio: 0.15
- Beta
  - Optimized portfolio: 1.63
- Sharpe Ratio
  - Optimized portfolio: 0.28

Optimal Weights

Symbols	
TPR	0.005465
NVDA	0.336309
ISRG	0.024714
AMD	0.044044
MNST	0.025390
ALGN	0.297285
ANET	0.021207
ABMD	0.206352
TTWO	0.026556
NFLX	0.012677