Georgia Institute of Technology

Dr. Tucker Balch
Associate Professor
School of Interactive Computing

Computational Investing, Part I

115: How Optimizers Work

Find out how modern electronic markets work, why stock prices change in the ways they do, and how computation can help our understanding of them. Learn to build algorithms and visualizations to inform investing practice.

QSTK Includes an Optimizer

- http://wiki.quantsoftware.org/index.php?title=QSTK_Tutorial_8

General Idea

- Define variables
  - Equity weights
- Define constraints
  - Minimum or maximum weights
- Define optimization criteria
  - Function of weights

- Optimizer algorithm:
  - Tweak weights
  - Check constraints
  - OK?
  - Call function
  - Repeat

Convex Optimization

- QSTK uses CVXOPT
- http://abel.ee.ucla.edu/cvxopt/

- (Thanks UCLA!)

Further Reading

- http://en.wikipedia.org/wiki/Convex_function
- http://en.wikipedia.org/wiki/Convex_optimization