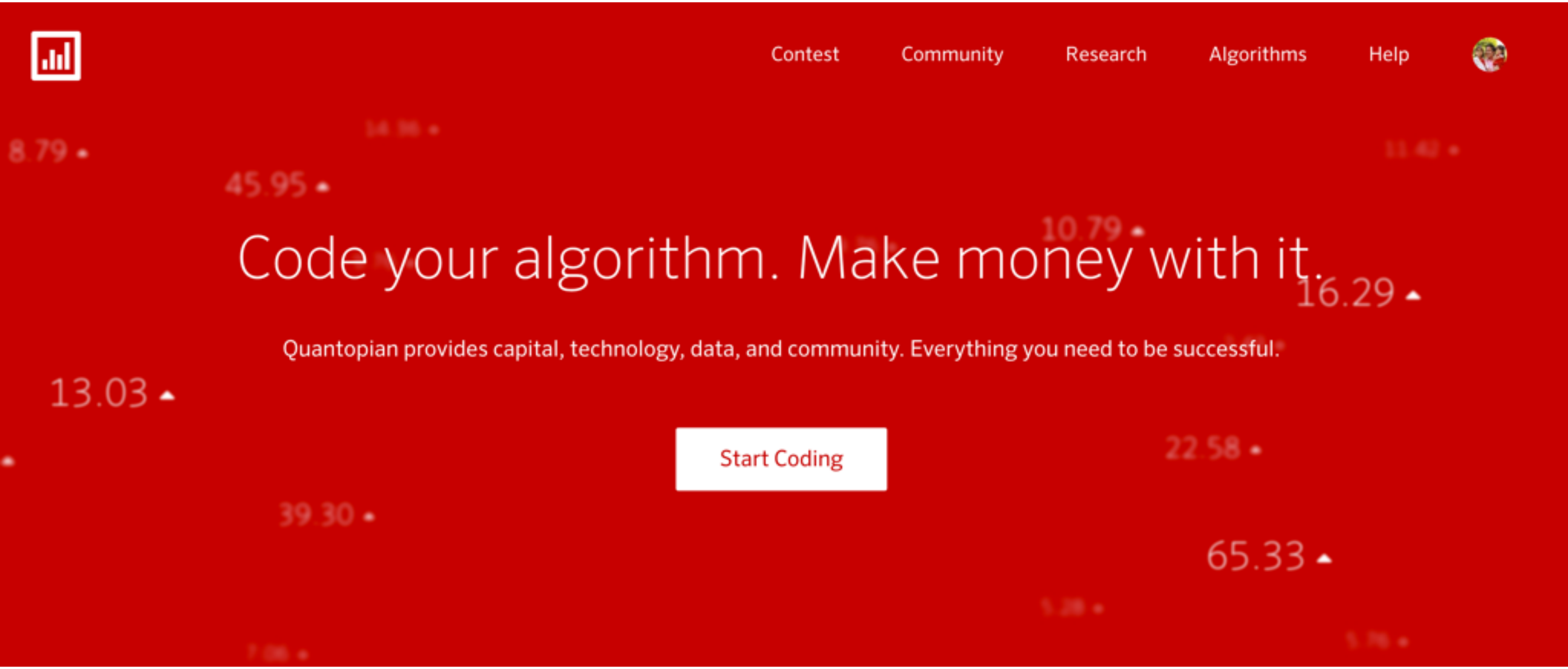


Code your algorithm. Make money with it.

Quantopian provides capital, technology, data, and community. Everything you need to be successful.

Quantopian

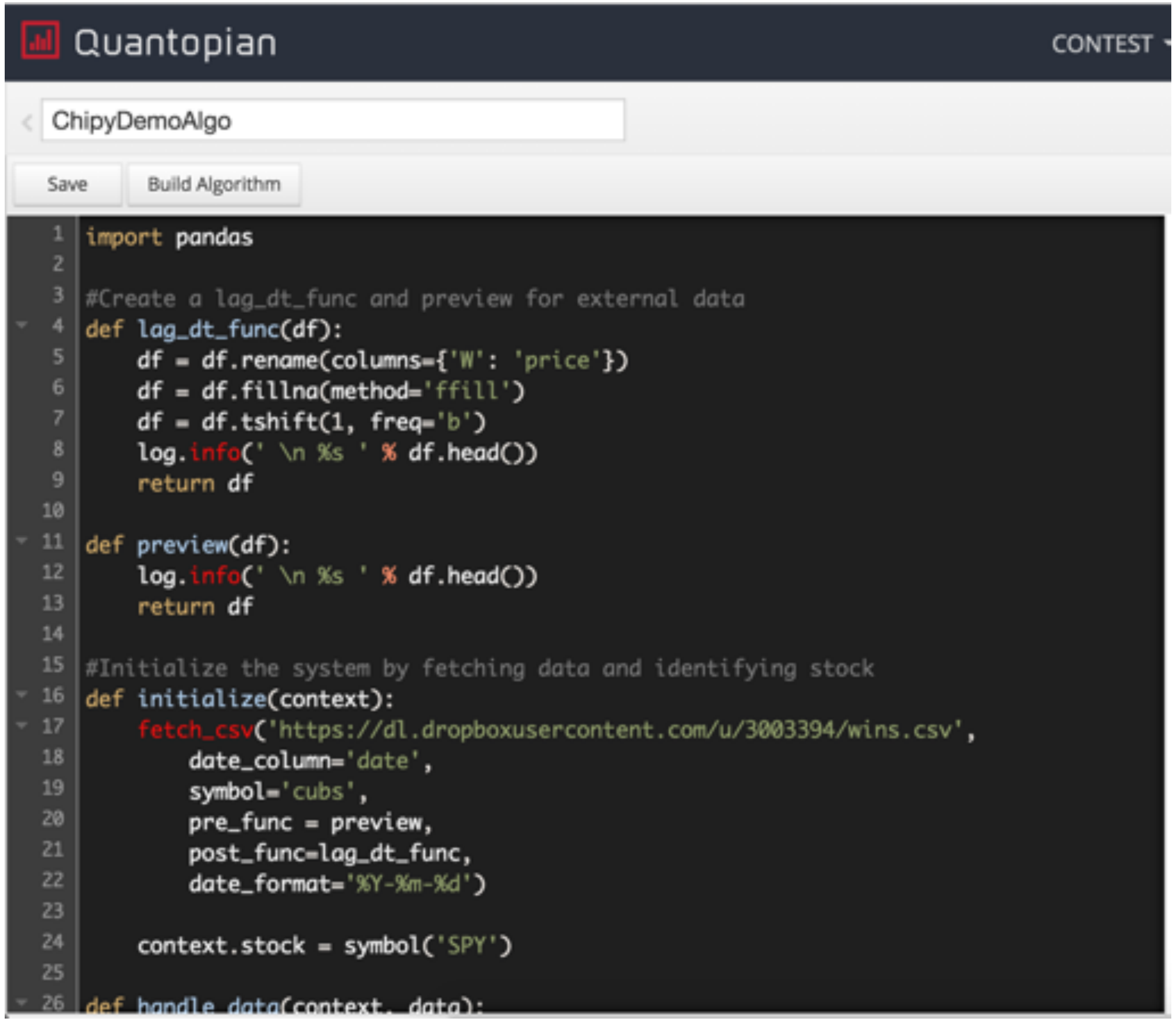
Chipy - September 2015

Setup

- Github: davidkunio/chipy-quantopian
- iPython Notebook
- Quantopian IDE/Backtest: Research backtests
- Slack: https://chipy-slack-invites.herokuapp.com/

Agenda

- Quantopian Overview
- Quantopian IDE Example
- Backtest Examples



```python
import pandas

#Create a lag_dt_func and preview for external data
def lag_dt_func(df):
    df = df.rename(columns={'W': 'price'})
    df = df.fillna(method='ffill')
    df = df.tshift(1, freq='b')
    log.info(' \n %s ' % df.head())
    return df

def preview(df):
    log.info(' \n %s ' % df.head())
    return df

#Initialize the system by fetching data and identifying stock
def initialize(context):
    fetch_csv('https://dl.dropboxusercontent.com/u/3003394/wins.csv',
        date_column='date',
        symbol='cubs',
        pre_func = preview,
        post_func=lag_dt_func,
        date_format='%Y-%m-%d')

    context.stock = symbol('SPY')

def handle_data(context, data):
```

Quantopian is…

- Platform for developing investment strategies
- Jupyter based IDE + Custom Backtest Module - no install necessary. High powered batteries included
- Built on open-source: Zipline
- Connected to a broker (IB) for live trading
- Surprisingly active forum

Quantopian isn't…

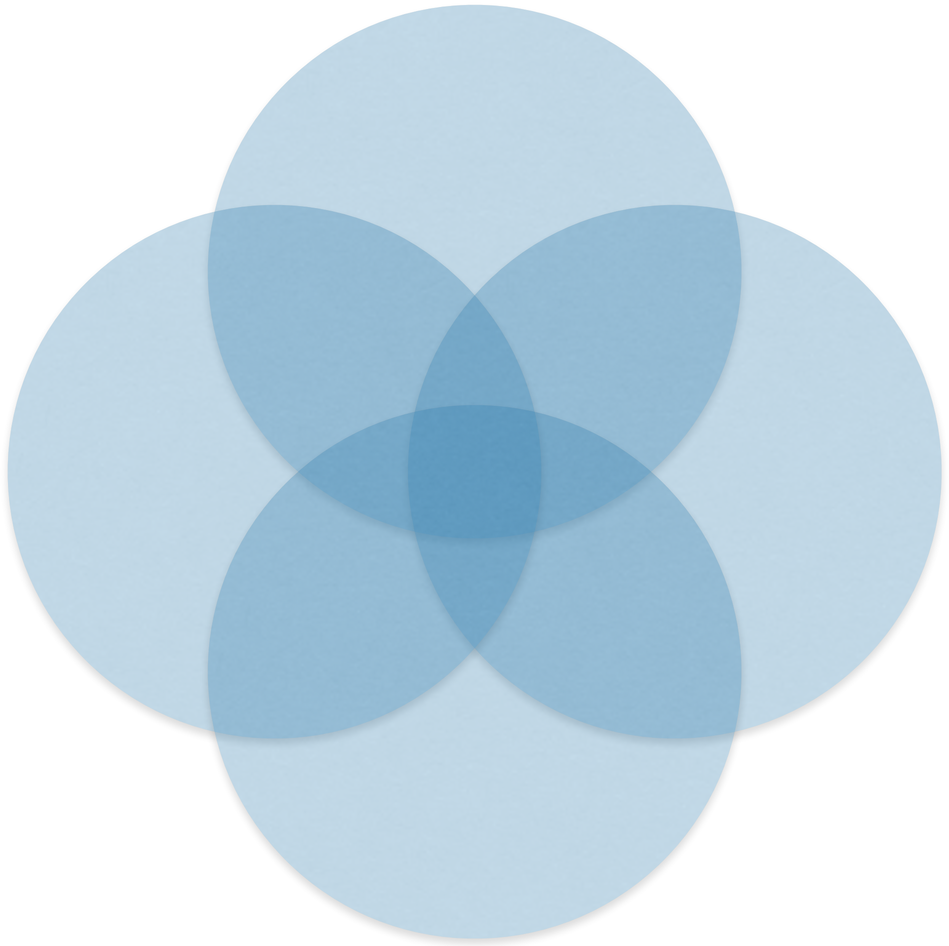
- Setup for High Frequency Trading (HFT) - per minute
- Fully open to the python development stack. There are integrated packages and a package white list system
- Multi asset class. US Equity/ETF Cash
- Limited Data: Namex per minute + Morningstar Fundamentals (Can access http hosted CSV files)

Quantopian is trying to…

- Crowd source a hedge fund
- Incentivize people to share their strategies.
- Contest - Run their money.

Quantopian needs a multi-dimensional person.

- Finance knowledge (or at least some intuition)
- Python skills
- Hacker skills
- Access to capital



Researching in Quantopian

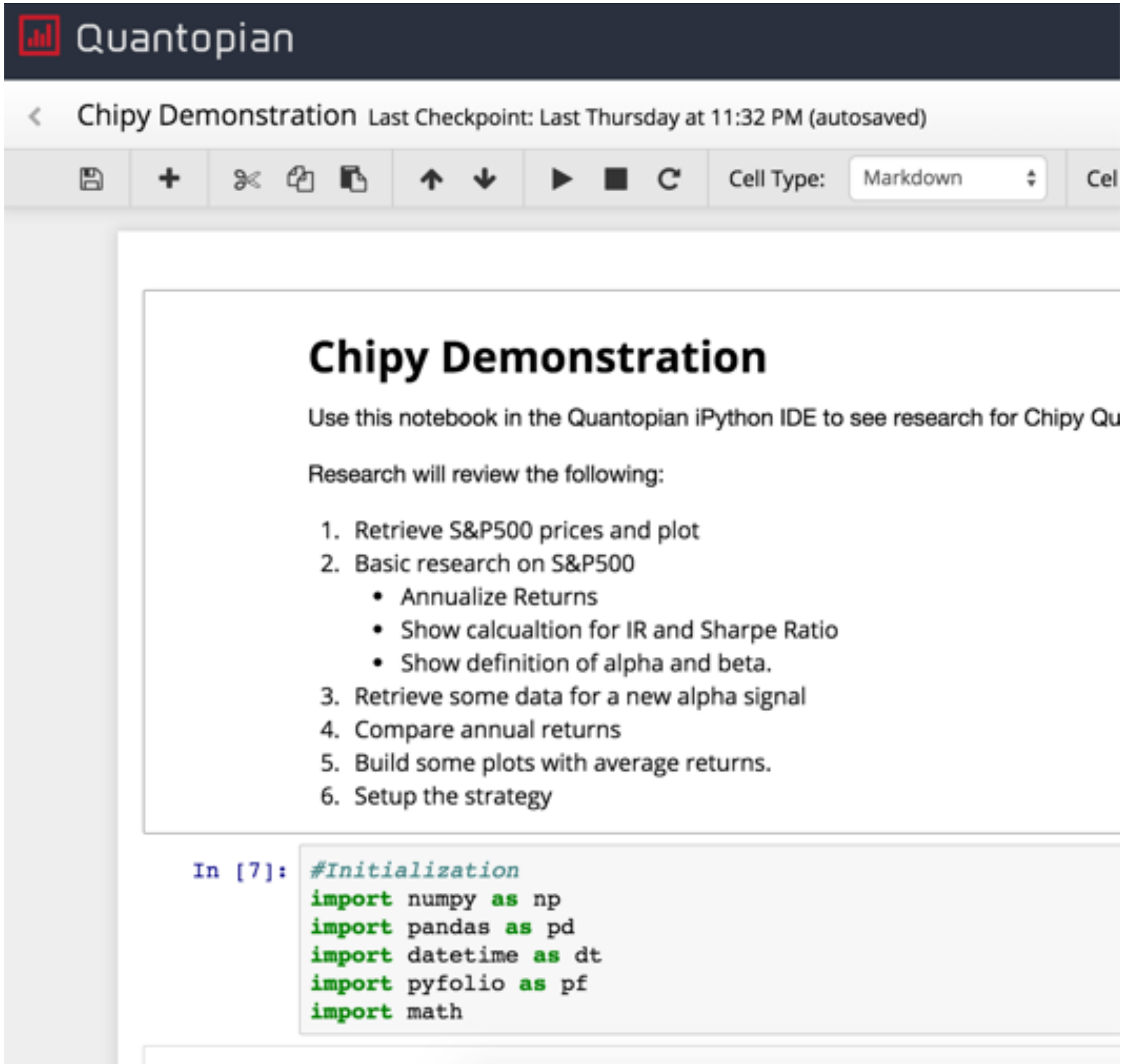
Strength	Weakness
Access to Quantopian API	Limited package support
Integrated Dynamic Coding tools	No environment support
Strong user support	

Quantopian

Lets take a tour

Research

- Explore in the tool
- External Data
- Researching a strategy
- Live Code Example!



Chipy Demonstration Last Checkpoint: Last Thursday at 11:32 PM (autosaved)

Chipy Demonstration

Use this notebook in the Quantopian iPython IDE to see research for Chipy Qu

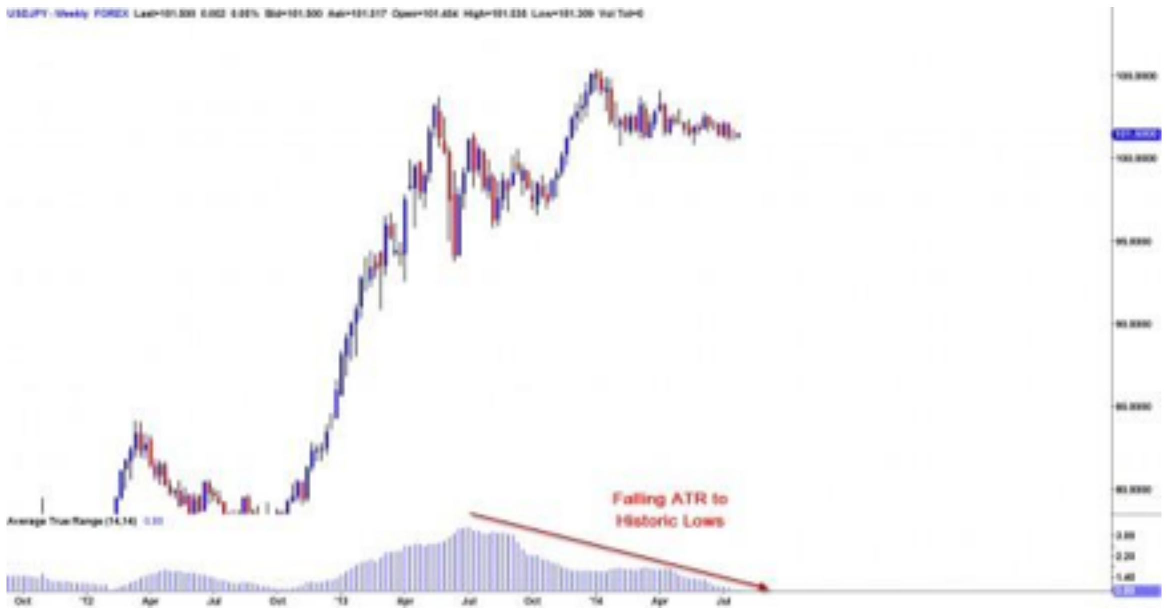
Research will review the following:

1. Retrieve S&P500 prices and plot
2. Basic research on S&P500
   - Annualize Returns
   - Show calcualtion for IR and Sharpe Ratio
   - Show definition of alpha and beta.
3. Retrieve some data for a new alpha signal
4. Compare annual returns
5. Build some plots with average returns.
6. Setup the strategy

In [7]:
```
#Initialization
import numpy as np
import pandas as pd
import datetime as dt
import pyfolio as pf
import math
```

Robust Strategy

- Intuitive connection to market economic thesis
- Diversified: broad market, good spread of out performance in a variety of market conditions
- Reproducible: Backtest, Out of sample testing, live monitoring
- Risk Optimized: Factor Exposures,



Some Closing thoughts

- Use the forums: Quants are typically reserved, but the forums are quite active

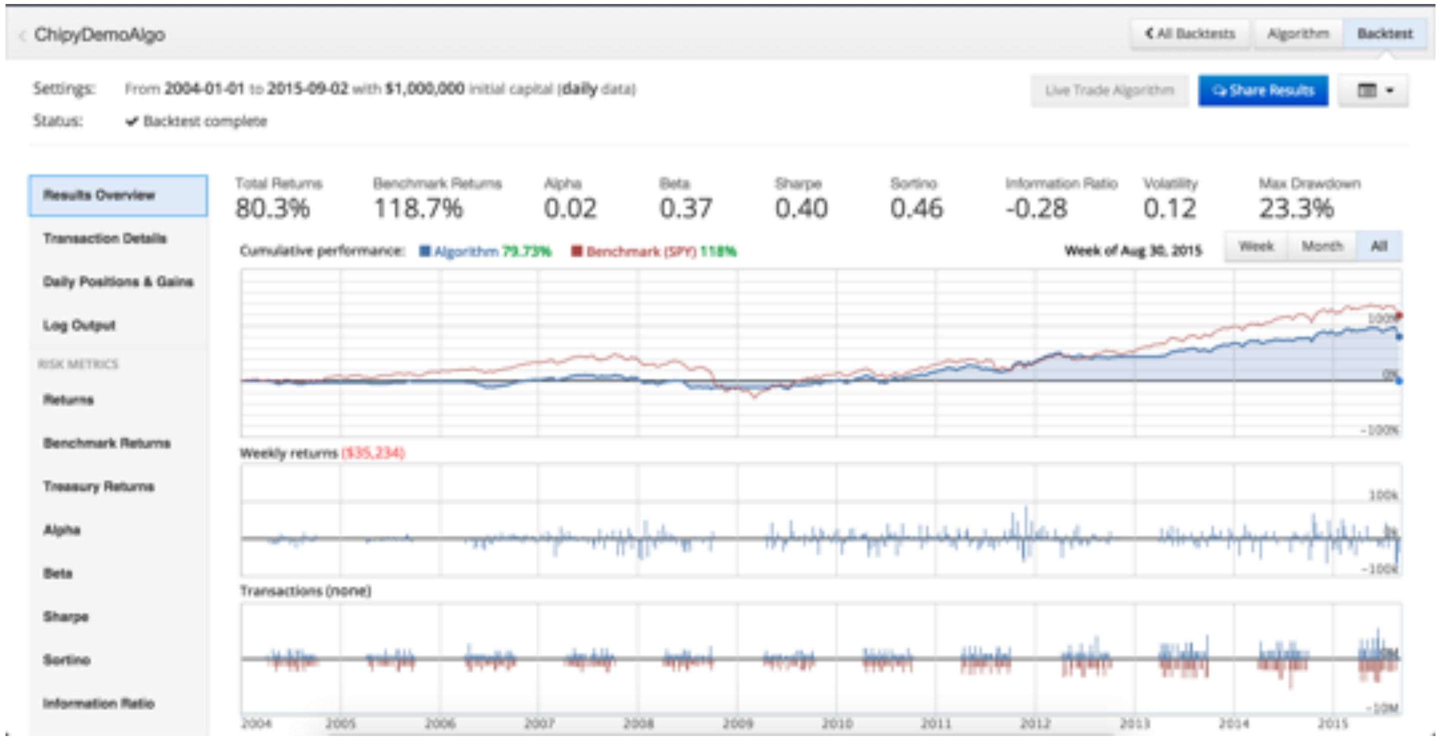
- Clone Algorithms

- Fundamental Strategies are somewhat unexplored

- Developing in the IDE has perks, but more formalized research (iteration, optimization) can be better handled outside of the product.

- Backtests aren’t “real”. There are a lot of other considerations: transaction cost, margins, slippage, tax, etc.

Backtest Challenge



ChipyDemoAlgo

Settings: From 2004-01-01 to 2015-09-02 with $1,000,000 initial capital (daily data)

Status: ✓ Backtest complete

Total Returns	Benchmark Returns	Alpha	Beta	Sharpe	Sortino	Information Ratio	Volatility	Max Drawdown
80.3%	118.7%	0.02	0.37	0.40	0.46	-0.28	0.12	23.3%

Cumulative performance: Algorithm 79.73% Benchmark (SPY) 118%

Week of Aug 30, 2015

Weekly returns ($35,234)

Transactions (none)

Places to start:

1. Improve the model
2. Alternative trading strategy (Going to cash isn't ideal)
3. Leverage - Leveraged ETF
4. Optimization

Other Resources

- This Presentation on Github
- Quantopian Overview: Jess Stauth
- General Quantopian Resources
- Strategy Building: Dan Dunn
- Slack for the Group