Modernized Crypto Assets

Reducing Volatility to Produce an ETF Style Commodity for Crypto

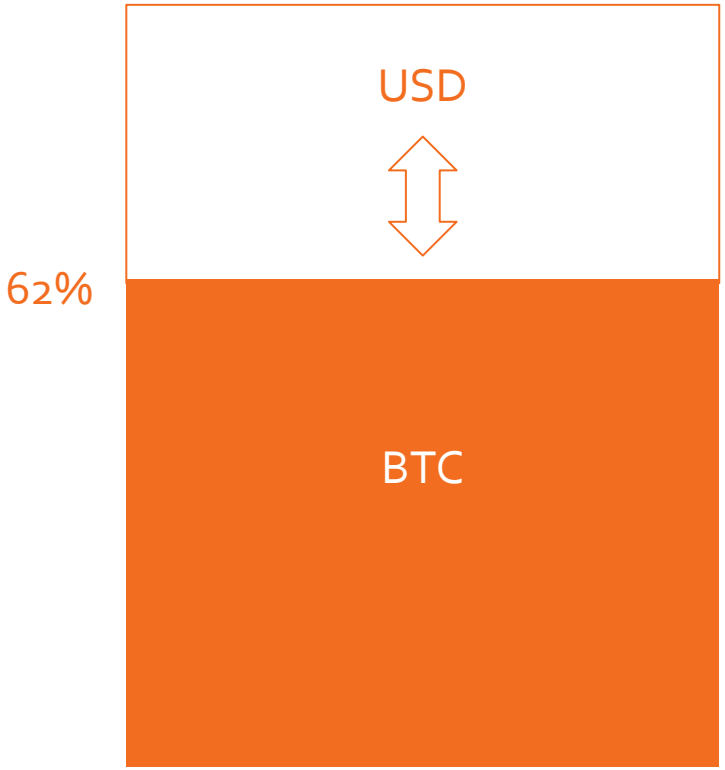
STANFORD GRADUATE SCHOOL OF BUSINESS | Center for Entrepreneurial Studies

Problem

- Crypto is massively volatile
- No crypto asset w. smooth index effect*
  - Bundles are too highly correlated
  - Contain undesirable assets

S&P 500 Chart. Unlike stocks no crypto asset exists which smoothly tracks the movement of the market.

Project



- Automated money management for crypto
- Intelligently moves $ between USD & crypto
- Works for all major currencies
- Money moves based upon prediction algorithms

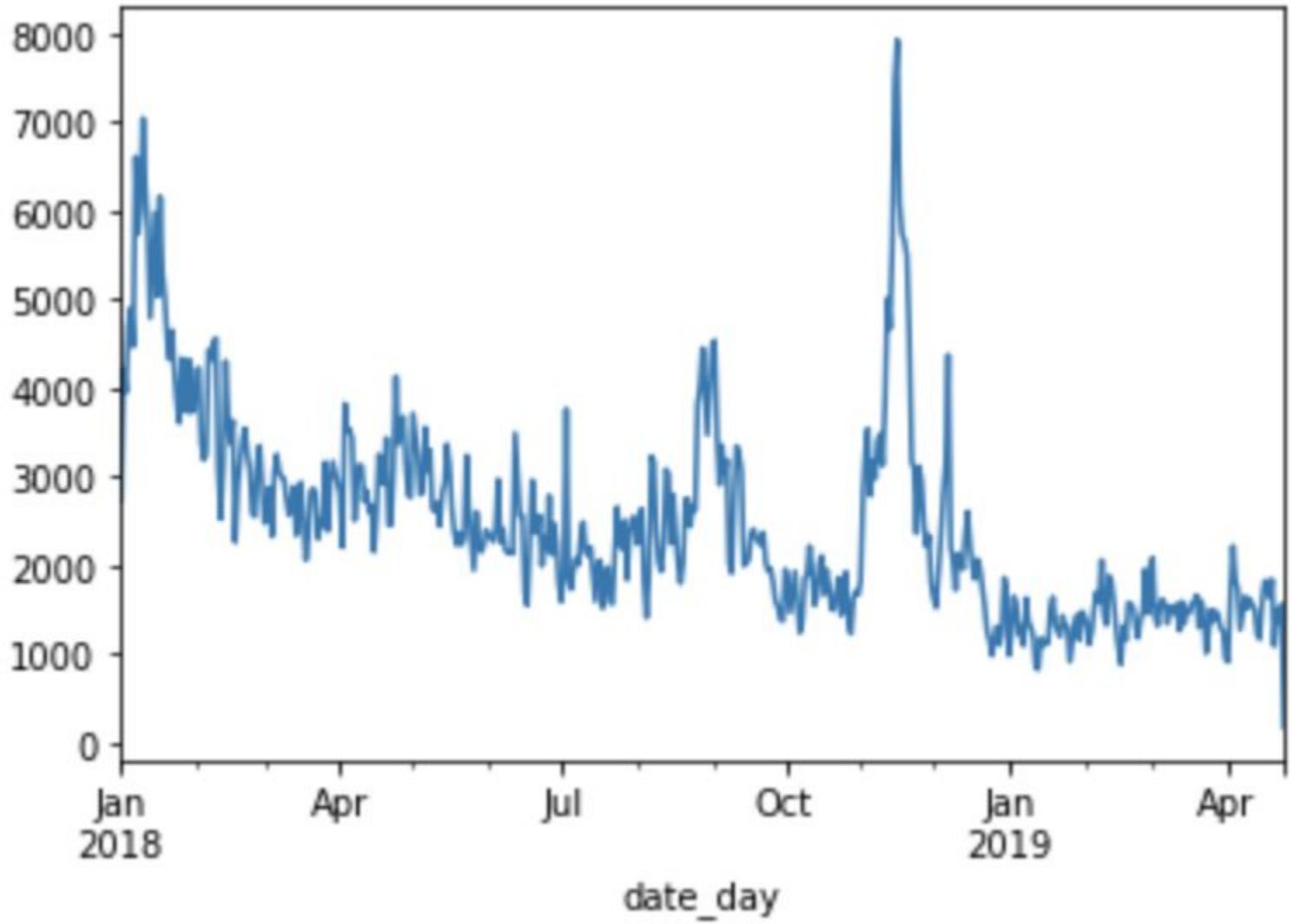
Technological Approach → Prediction Algorithm

- Massive dataset to feed prediction capabilities
  - Per minute data
  - Sentiment data
  - Volatility & derivative metrics
  - 36.9 million unique pieces of data in system
  - 95k new pieces of data daily
- Feed data into well tuned RNN
- Use predictions to inform currency/USD split

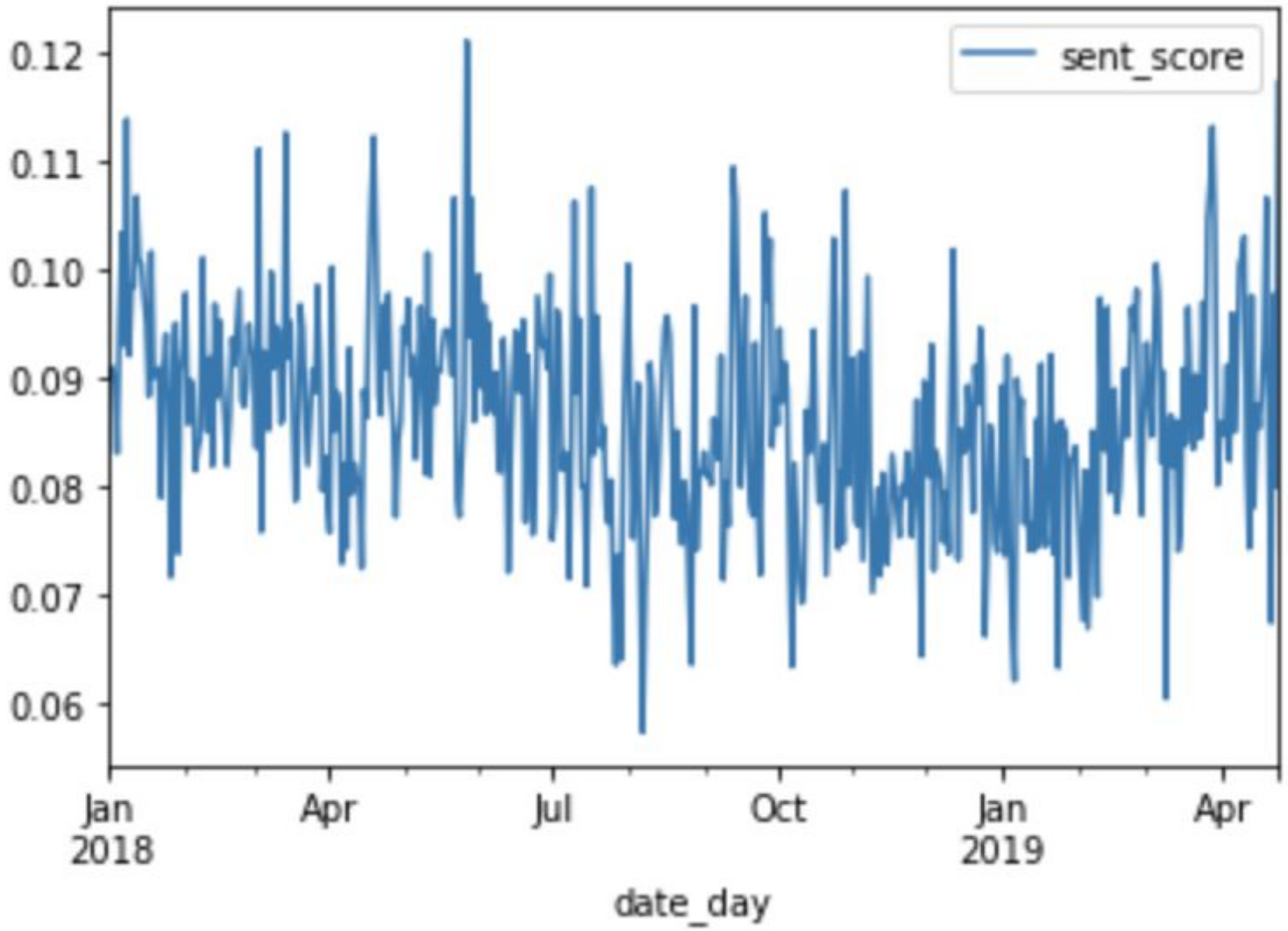
NLU + Sentiment

- Hypothesis
  - Public sentiment drives market prices for crypto assets
- Data
  - Reddit + Twitter
- Methods
  - Off the shelf sentiment classifiers (NLTK+TextBlob)
  - SocialSent
  - Bert
- Sentiment fuels RNN

r/btc posts per day



r/btc sentiment



RNN

Kidding - It's Just Math

$$h_t = \sigma(W^{(hh)} h_{t-1} + W^{(hx)} x_{[t]})$$

$$\hat{y}_t = softmax(W^{(S)} h_t)$$

- RNN's analyze both the new input & the previous outputs
- ie. RNN's can statistically relate BTC's price dip today to last weeks LTC volatility
- Handle time series data very well

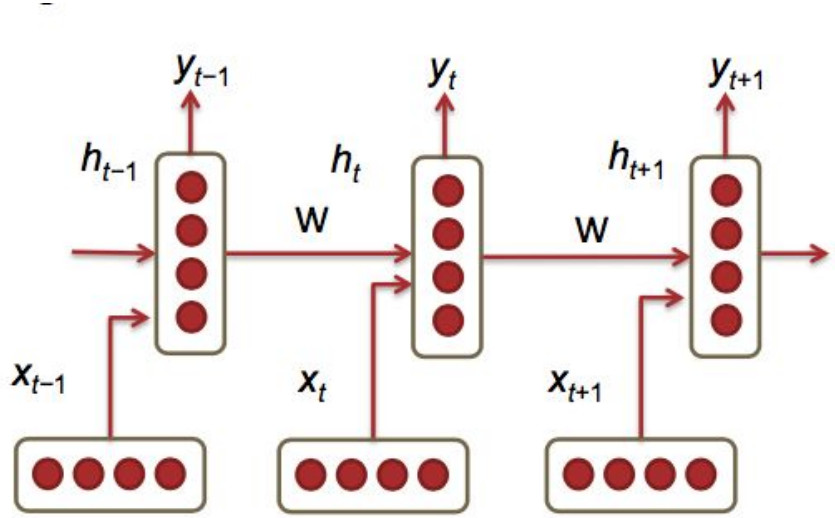
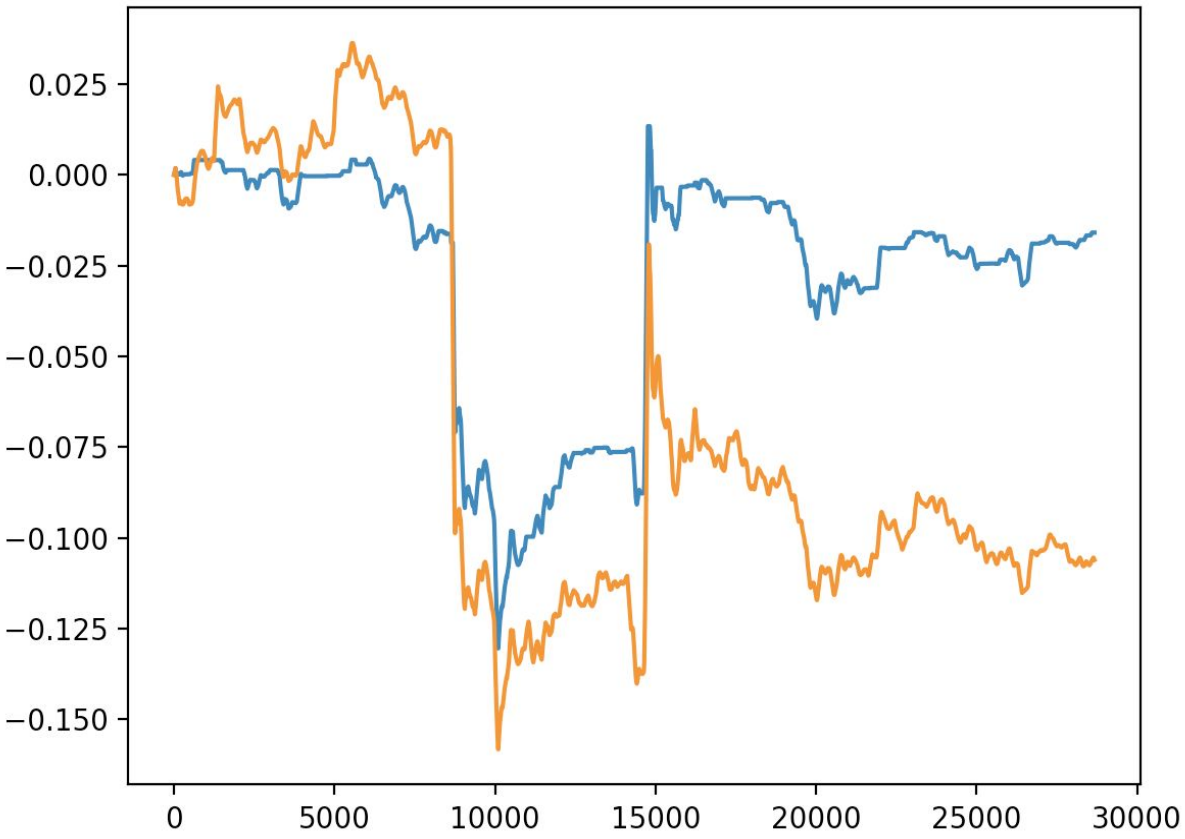


Figure 3: A Recurrent Neural Network (RNN). Three time-steps are shown.

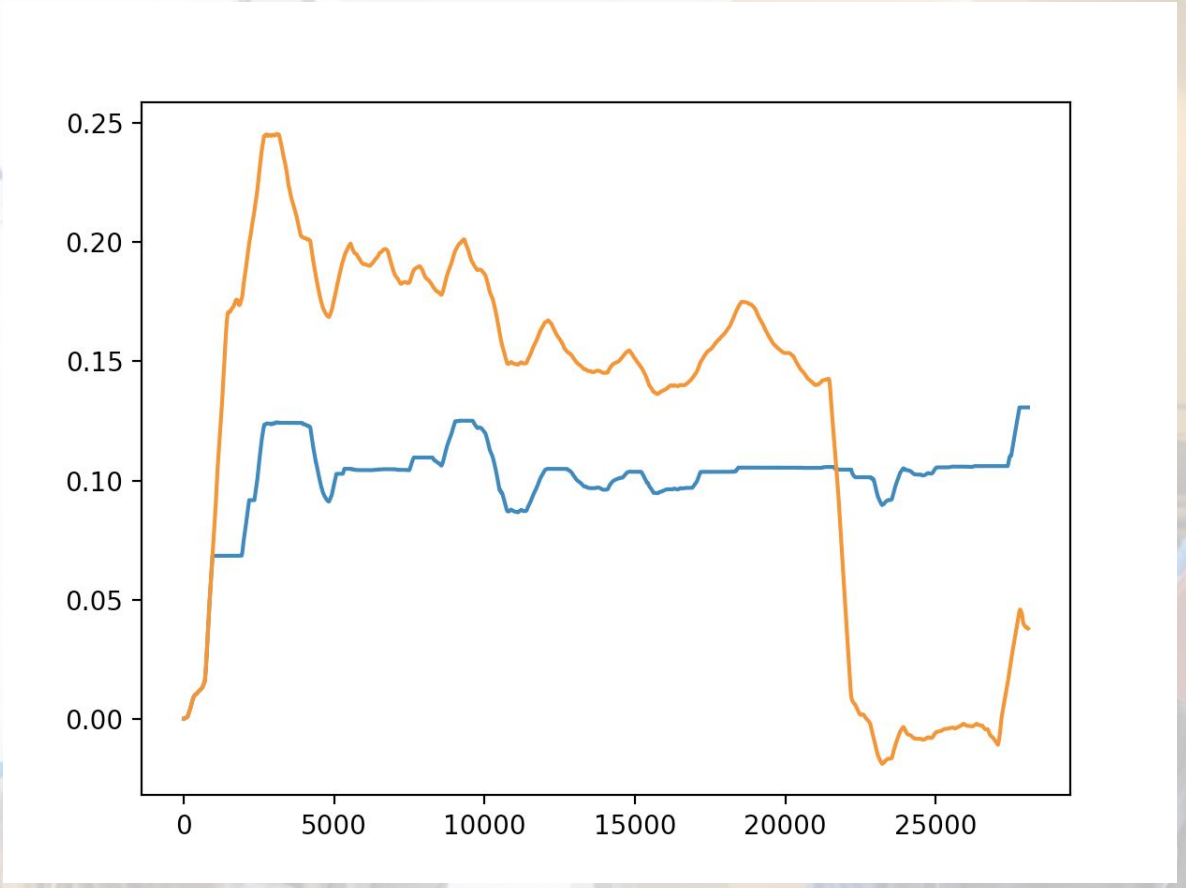
Early Model Results



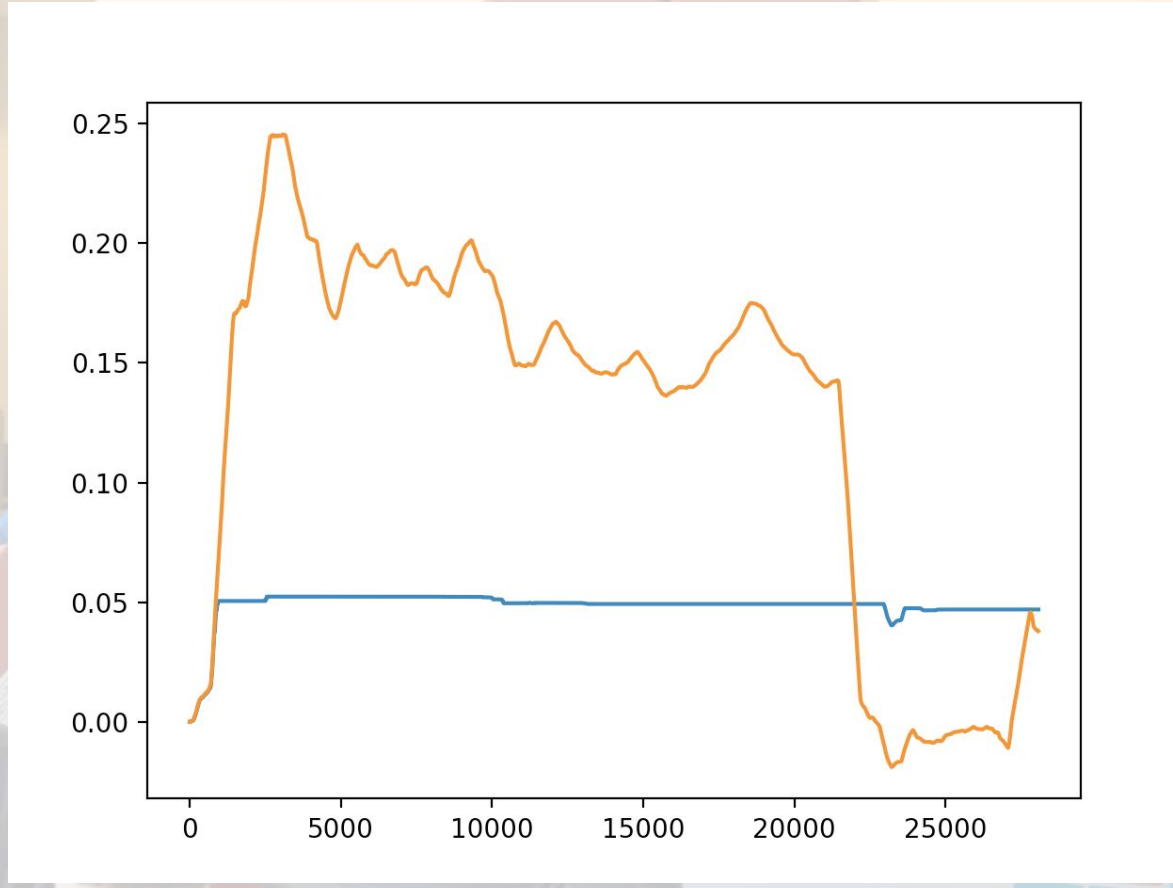
- Orange = ETH Price
- Blue = Model Performance*
- Outperformed market by ~10%
- Mitigate risk

X Axis: Time since T_0
Y Axis: Relative market change since T_0 (ie. -0.100 = -10%)

* model performance does not factor in cost of market entry
* blue is on a testing set, and was not live traded market data



Moderate Order Executions (12h)



Conservative Order Executions (12h)

Next Steps

- Improve model performance
  - Implement Sig Opt
- More AWS Training
- Finalize ghost trader
- Analyze real market results