What went wrong?

- Graphs not labelled

- Data and algorithms not thoroughly explored

- Methodology was wrong

- Methodology was too shallow

Exploration

- Explore and take into account stocks dropping in and out of S&P 500 Index

- Explore different values of PCA (grid search) (take into account variance)

- Understand the structure of the t-SNE graph better

Methodology

- Need smarter ways of selecting portfolios off a t-SNE graph

-Where on the graph do the “good performers” and “bad performers” or “non-bad” lie?

- Need better metrics to evaluate a portfolio

Ideas

- Can we use data other than returns for each stock? Can we build t-SNE graphs off this new data?

- What is our goal? Are we trying to emphasize portfolio choosing strategy? Emphasize t-SNE?

-Lowest Variance, Highest Return portfolio

t-SNE

- Try to capture some feature of the stocks, so that we can choose the same or dissimilar stocks

- The structure of the visualization should be used to identify and differentiate features of the data

PCA:

- Data is linear? If so, explain PCA doing OK job

Stock Indicators

- Price Trends

- Chart Patterns

- Volume and Momentum Indicators

- Oscillators

- Moving Averages

- Support and Resistance Levels

Portfolio Picking Strategies

- Low P/E (Price to Earnings) Ratio

- Can tell you if a stock is over-valued (high ratio) or under-valued (low ratio)

- Doesn’t account for growth or dividend yield

- Low Dividend adjusted PEG(Price/Earnings to Growth) Ratio

- More accurate than P/E since it accounts for growth of Earnings and dividend yields, which can explain high price

- Still doesn’t account for the actual state of the economy

- Low P/B (Price to Book) Ratio

- Useful when a company has inconsistent earnings

- Better for capital-intensive and tangible asset businesses

- Incomplete on its own, and low ratio can also mean financial problems

- D/E (Debt to Equity) Ratio

- How much company finances are from borrowed money (debt) vs. shareholder money (equity)

- Higher ratios are riskier, but can also indicate more growth

- Standard values can be industry specific (5 D/E is high in tech, low in manufacturing)

- High FCF (Free Cash Flow)

- Income focus vs. Capital preservation vs. Capital Appreciation

Portfolio Evaluation Metrics

- Treynor Measure

- Sharpe Ratio

- Jensen Measure

Checklist

- Gather comprehensive stock data on current and former S&P 500 stocks

- Clean the data

- Develop metrics to measure daily market performance (Market Cap Change, P/E ratio, etc.)

- Experiment with various combos of PCA and t-SNE (Do grid search)

- Look for graphs with high separability

- Cluster the resulting best graphs

- Pick stocks from various clusters that fit various strategies

- Evaluate portfolios