Prediction of Stock Market with Sentiment Analysis

Sizhang Zhao(sz459), Lin Zeng(lz447), Qin Lu(ql224)

September 23, 2016

1 Background

People are emotional. It is true that market sentiment would play a big role for stock market, which means sentiment may become a great indicator for the prediction of stock market. However, measuring market sentiment is not easy, while measuring public sentiment would be comparatively easier. In our research, we focus on sentiment analysis with Twitter and Yahoo finance, based on which we construct our own measurement of public sentiment. Then we build up machine learning models to measure the relationship between public sentiment and stock returns. Finally, we would design a portfolio based on our sentiment factor and test its application in investments.

2 Data Set

Our sentiment data would come from Twitter (tweets) and Yahoo Finance (financial news).

Our financial data would come from Yahoo Finance (return data of DowJonesIndustrialAverage (DJIA)).

3 Methods

1. For sentiment analysis, we would implement natural languages processing (NLP) method and classify the tweets or news into different groups based on generated word list, such as calm, happy, alert and kind. We would finally construct our sentiment vectors with the results from this part.

2. For learning algorithms, we are going to implement linear regression and SVM to predict the return of DJIA with our sentiment vector indicator.

3. For investment back-testing, it comes to the construction of a simple portfolio and testing investments based on our indicator prediction. We would finally figrue out whether our indicator would work or not.