Project code, data and results also available on –

1. https://git.ng.bluemix.net/vsharma4_be16/bondai
2. https://github.com/thevipulsharma/bondai

Test results –

We had the data financial data available for 482 companies listed on S&P 500 index.

The bond credit rating model is trained on 10 years data available for 400 companies.

The trained model was then tested on the data of remaining 82 companies.

The Financial sentiment analysis was done for two companies –

1. Google
2. Reliance Communication

The formulas used for credit ratings –

$$Short\ term\ credit\ rating = \frac{Total\ current\ assets}{Total\ current\ liabilities}$$

$$Long\ term\ credit\ rating = \frac{Total\ non\ current\ assets}{Total\ non\ current\ liabilities}$$

$$Overall\ credit\ rating = \frac{Total\ assets}{Total\ liabilities}$$

Our Analysis and Viewpoints – Though the bond credit rating model performed according to our expectations in case of long-term and overall credit ratings, the results for short-term credit ratings were very far from expected. This is probably due to our model design which make its predictions based on past three years data, and thus fails to model out the short-term trends.

The following can be done to improve the predictions of the network –

1. Hyper-parameter tuning
2. Different models for different credit ratings
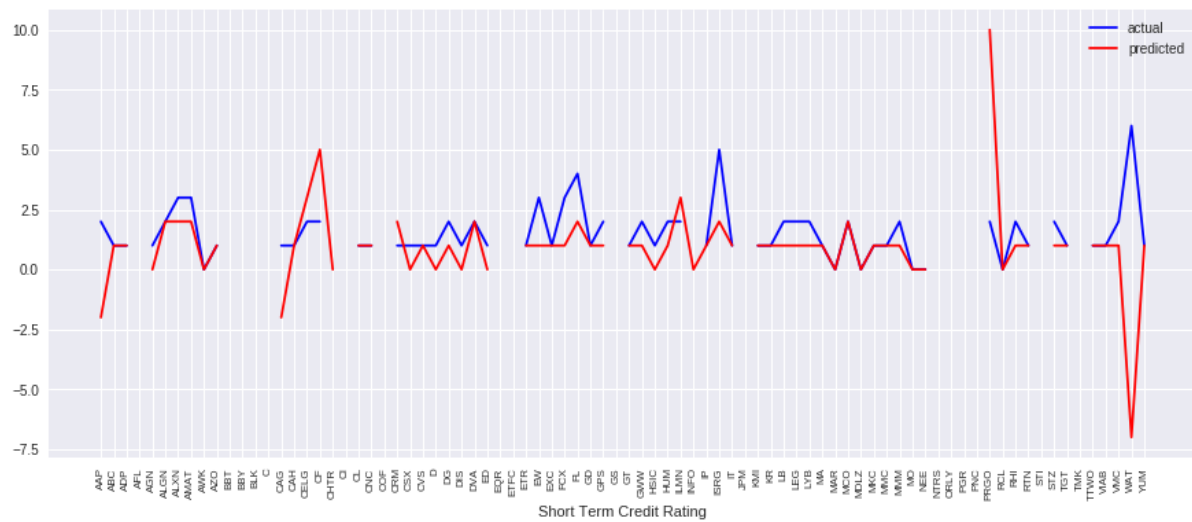3. Modelling out the exact number of time-series steps for each type of model.

The financial sentiment analysis model performed according to expectations. The plotted graph of sentiment scores and stock price variances when analysed carefully within the same range gave a good result of correlation between them.
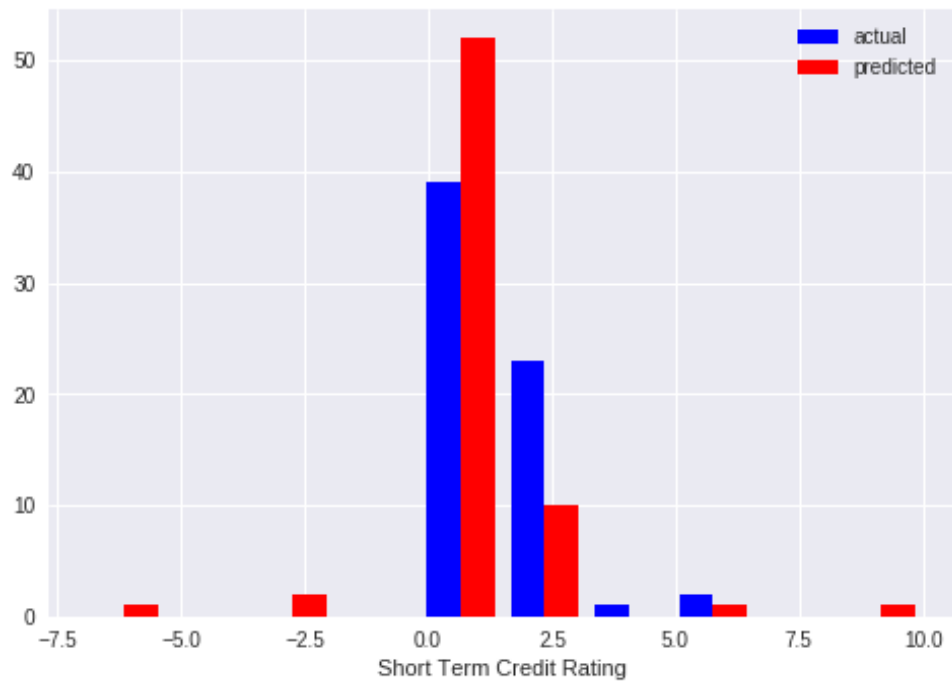
However, to further improve our results we could use –

1. An improved lexicon of numerous financial words on top of VADER sentiment analysis lexicon.
2. A customized financial sentiment analysis model with rich training data.
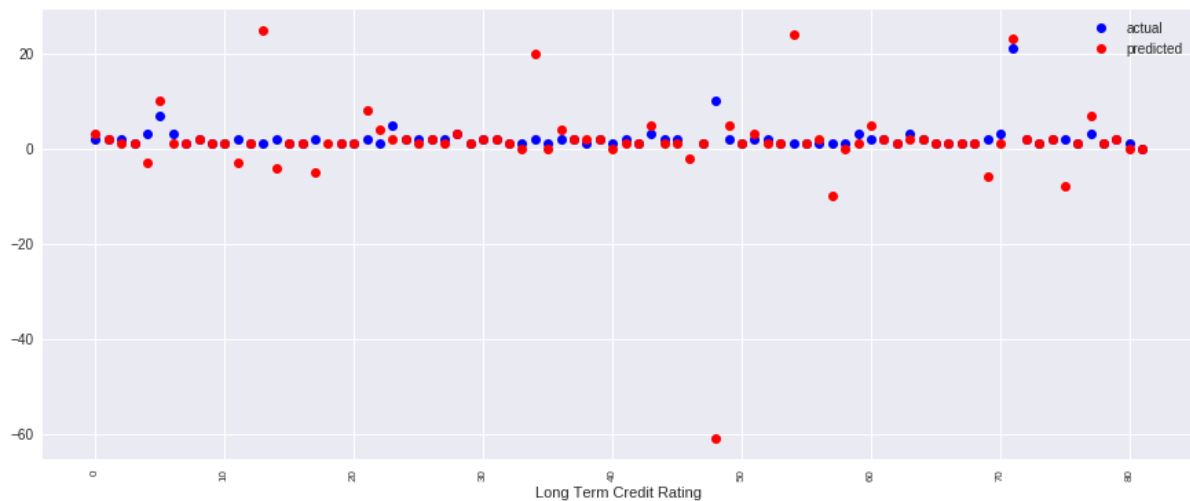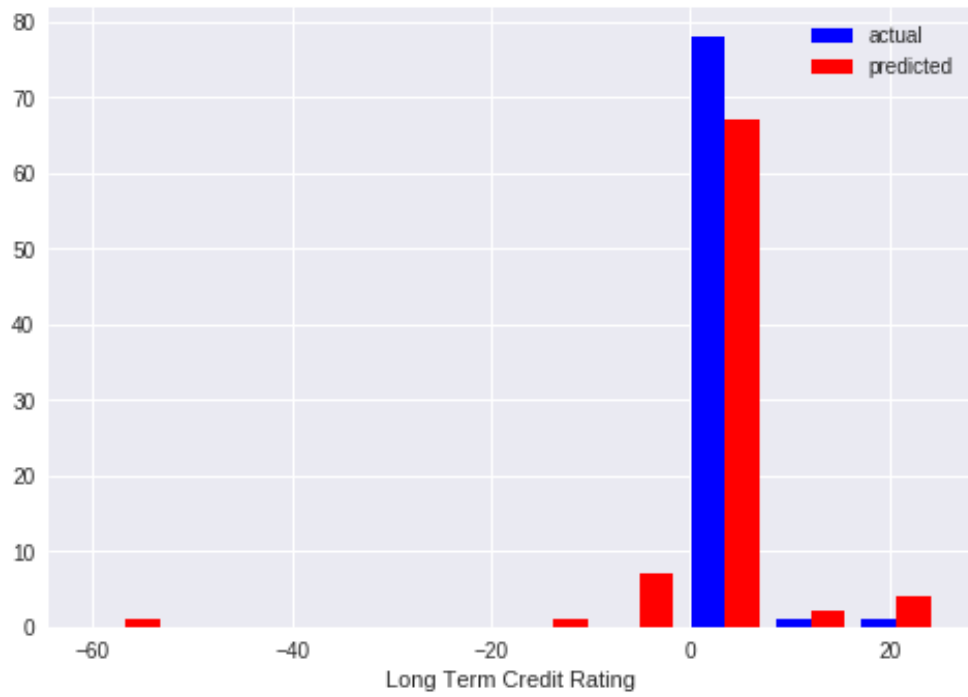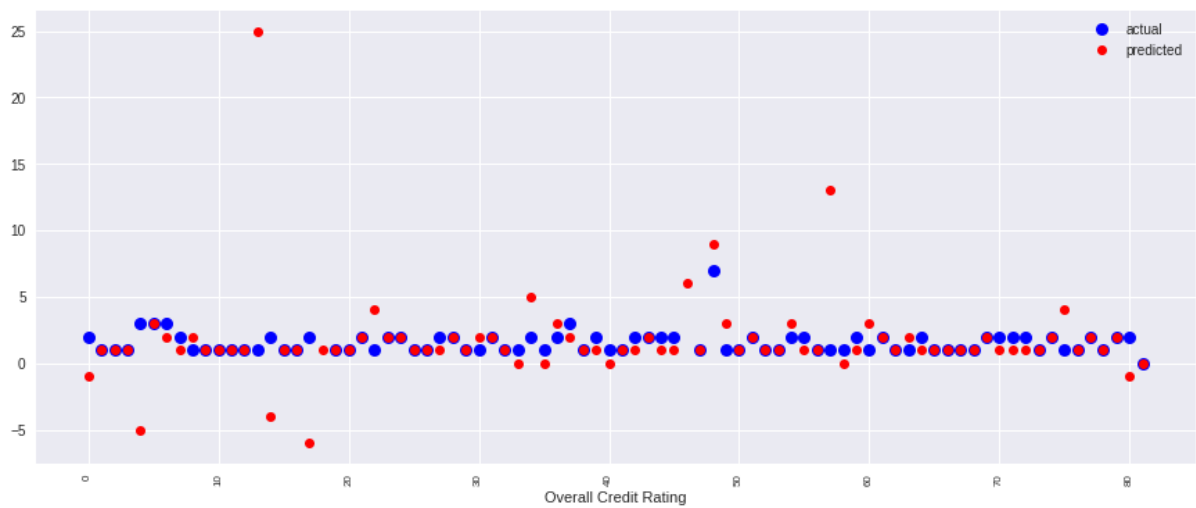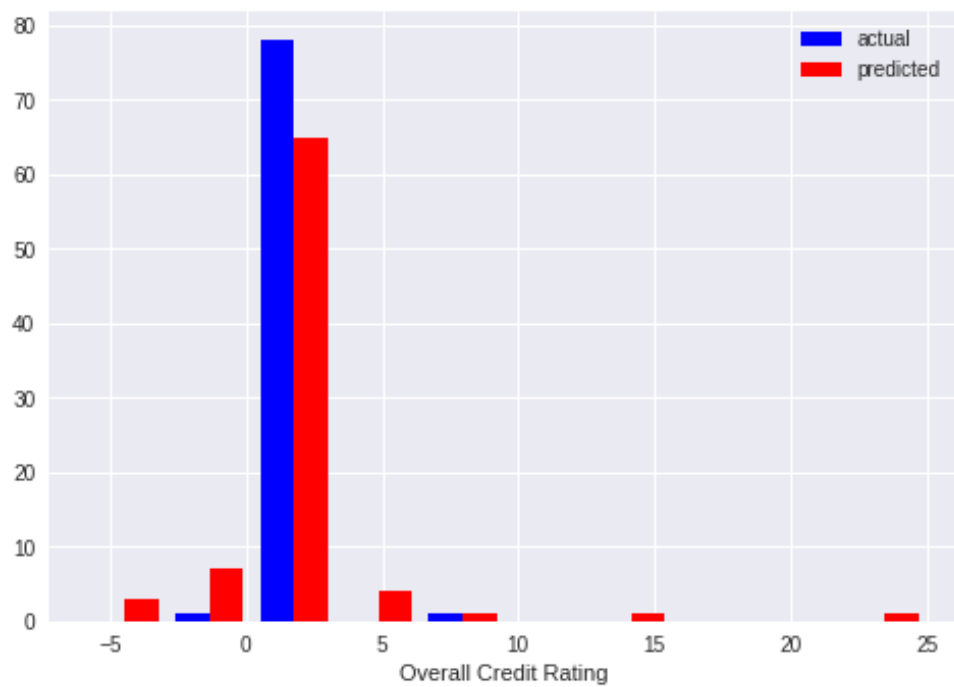
Observed results –
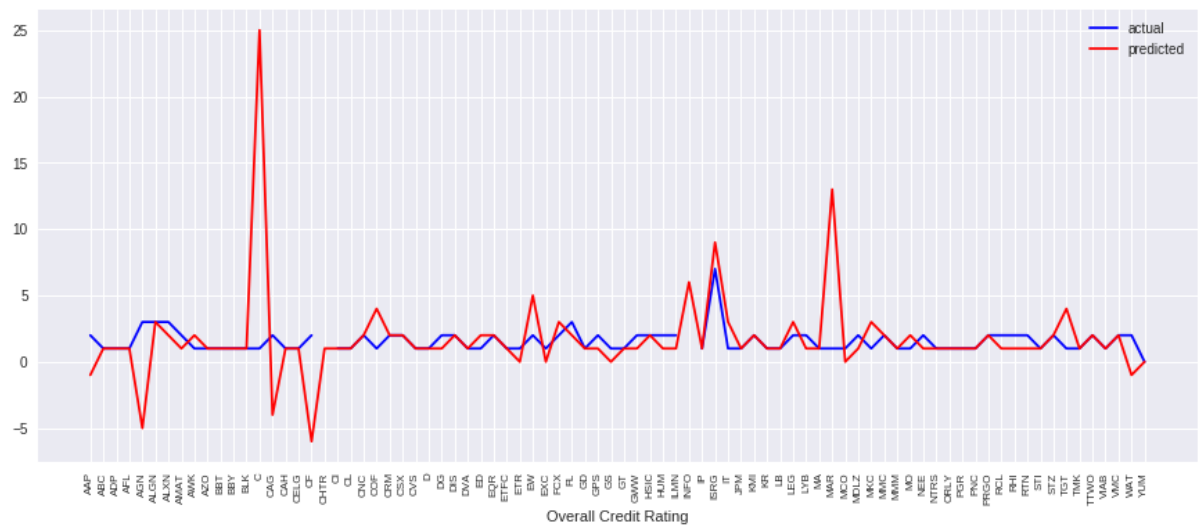
Short Term Credit Ratings -

Long Term Credit Ratings –

Overall Credit Ratings –

Financial sentiment analysis –

Google LLC NewsPaper Based Finanacial Sentiment Analysis

Google LLC Stock Prices

Reliance Comm NewsPaper Based Finanacial Sentiment Analysis

Reliance Comm Stock Prices