

Effect of News Sentiment on Stock Price: A Deep Neural Network and Statistical Analysis

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Accurately predicting the price of stock markets has broad implications for investors as it helps them make informed decision when investing. While this is routinely done using the state-of-art machine learning (ML) based models, these models often do not consider the sentiment of general public investing in it. Moreover, literature lacks studies comparing and contrasting the performance of advanced ML models for the same stock market data. In this work, we combined sentiment analysis with two deep learning approaches namely long short-term memory (LSTM) and gated recurrent unit (GRU) to accurately model the behaviour of stock market. Our models that combine financial news sentiments with fundamental data of stock market significantly improves upon the accuracy when compared with existing models without sentiment. The analysis is supported by the performance metrics such as root mean square error (RMSE) which decrease by ~23% in LSTM and ~17% in GRU when financial news sentiments are incorporated.

Keywords: Stock Price, Deep Neural Network, LSTM, GRU, Financial News Sentiments