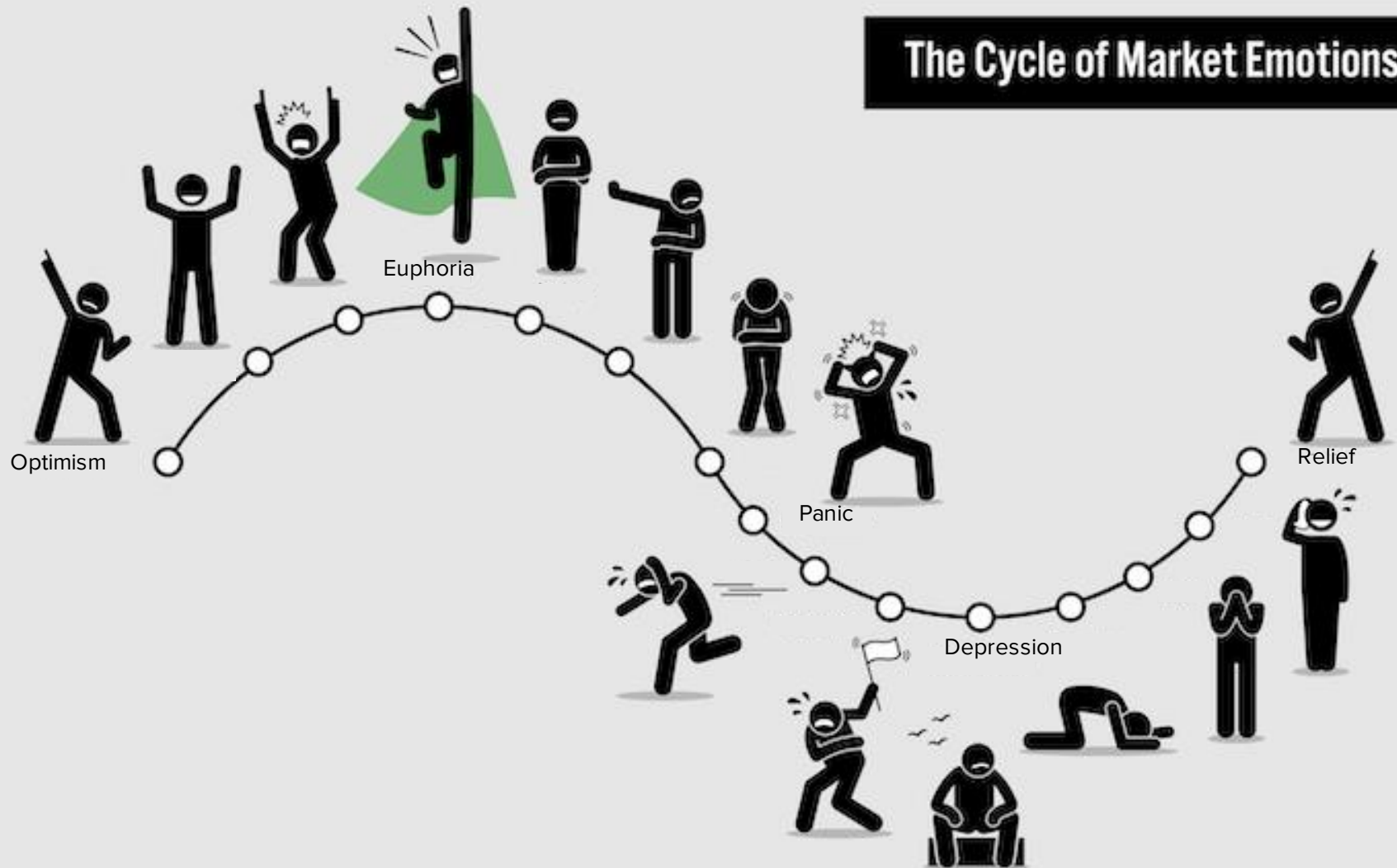




# Stock Trend Prediction using Sentiment Analysis

Team 19

# The Cycle of Market Emotions



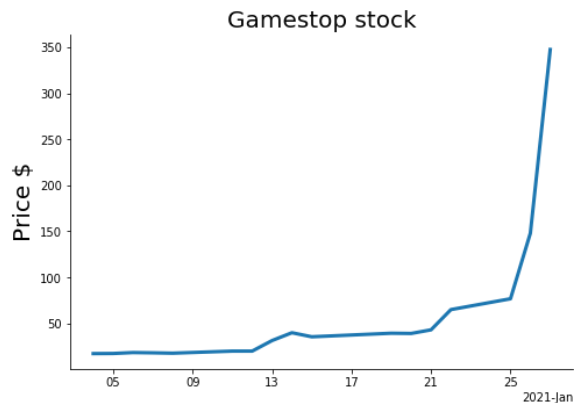
# Motivation

- Do traditional methods for stock prediction suffice in digitally connected world?
- Does news and social media influence stock price?
- Can we quantitatively measure impact of sentiment on stock price?

GameStop sitting amongst Tesla and Amazon after reddit users make it a Fortune 500 company

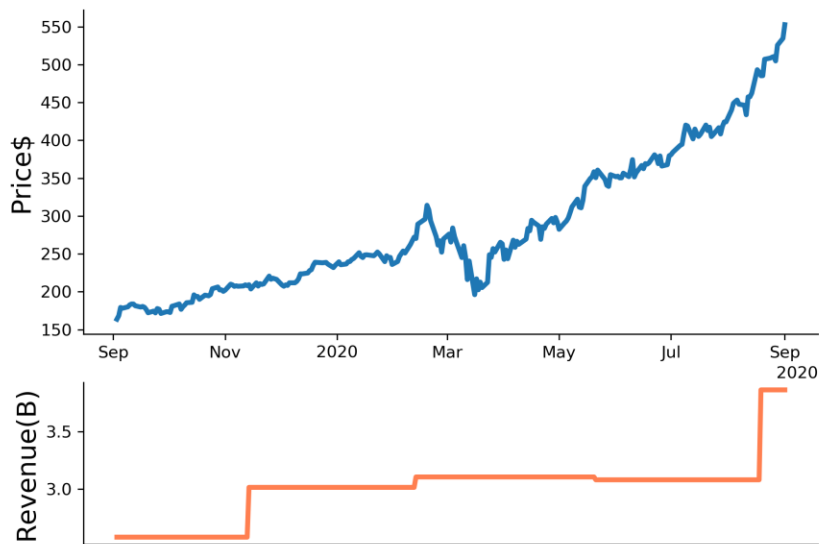


Posted in r/memes by u/thepotsmoker

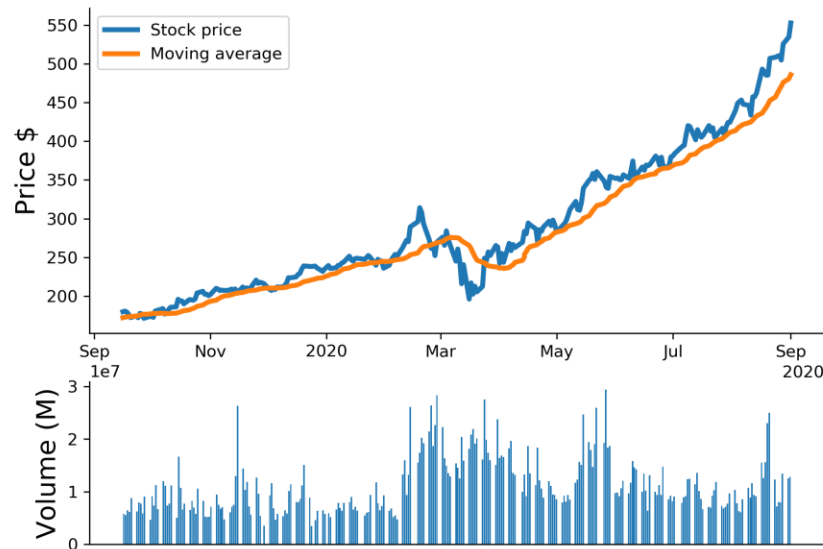


# Stock price prediction – Traditional models

## Fundamental Analysis



## Technical Analysis





# Sentiment Analysis

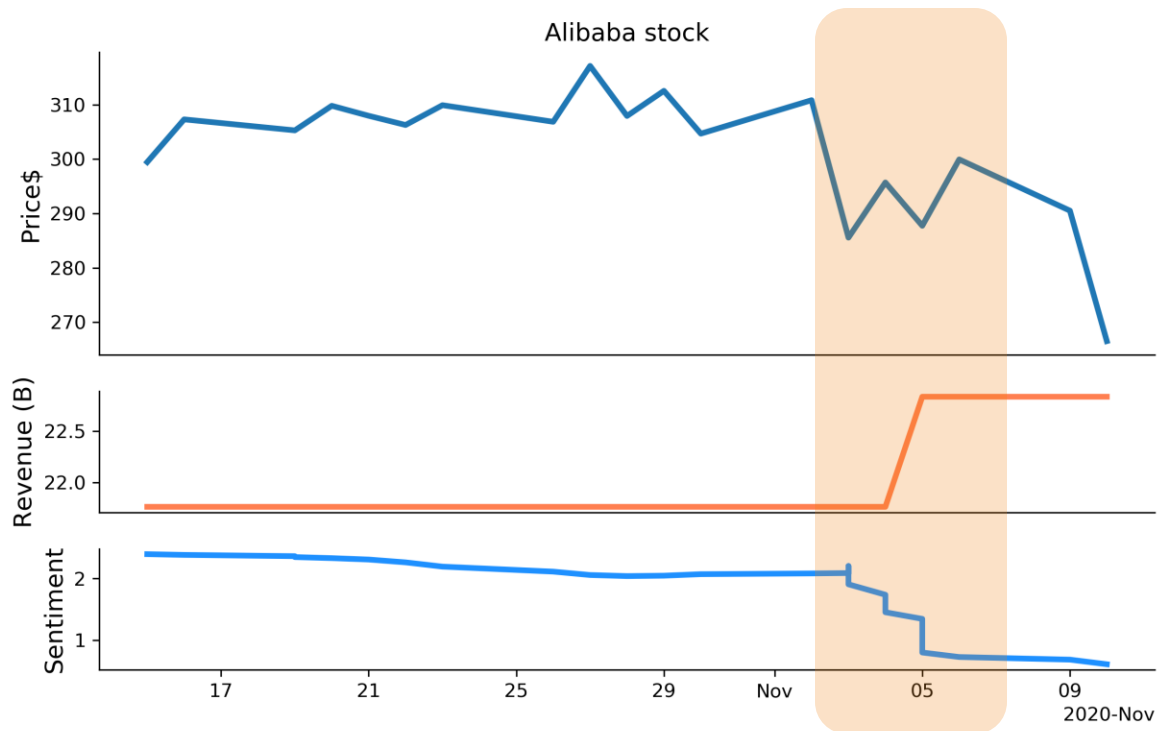
**Sen·ti·ment:** An opinion.

**Sentiment analysis:**

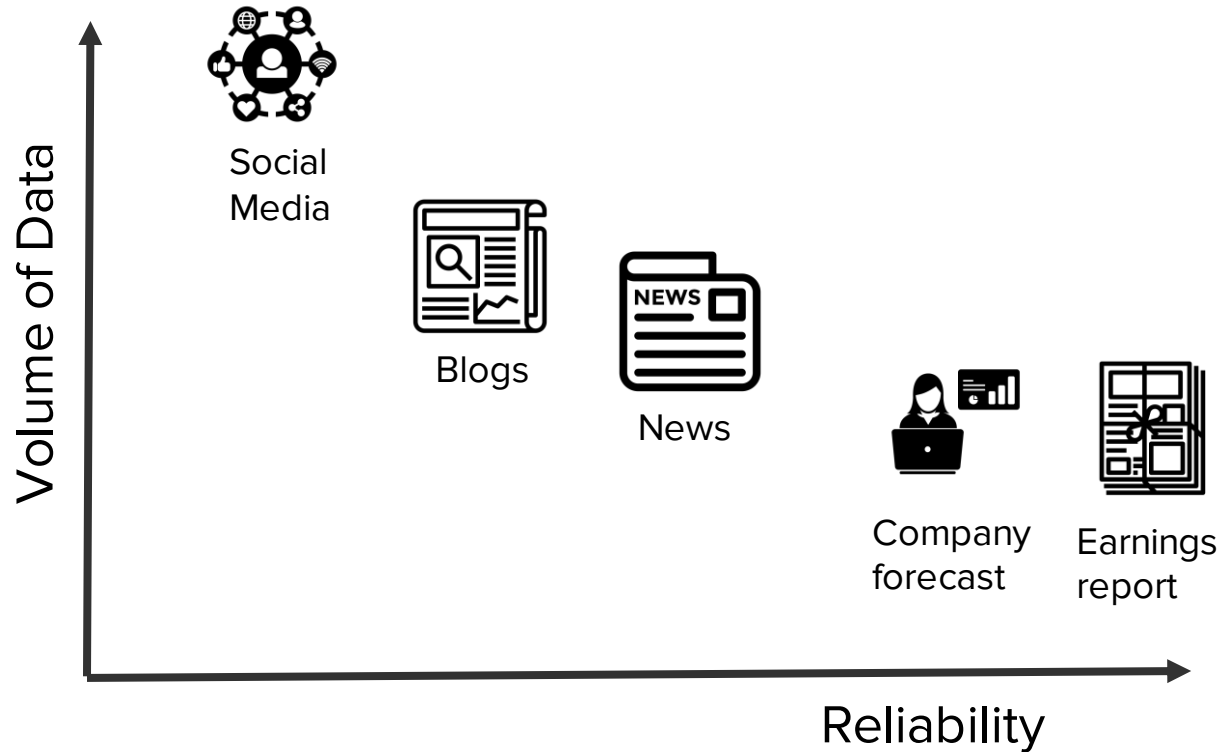
Determine stock price and trend  
using sentiment



# Fundamentals vs sentiment analysis





# Sources of Sentiment



# Problem statement

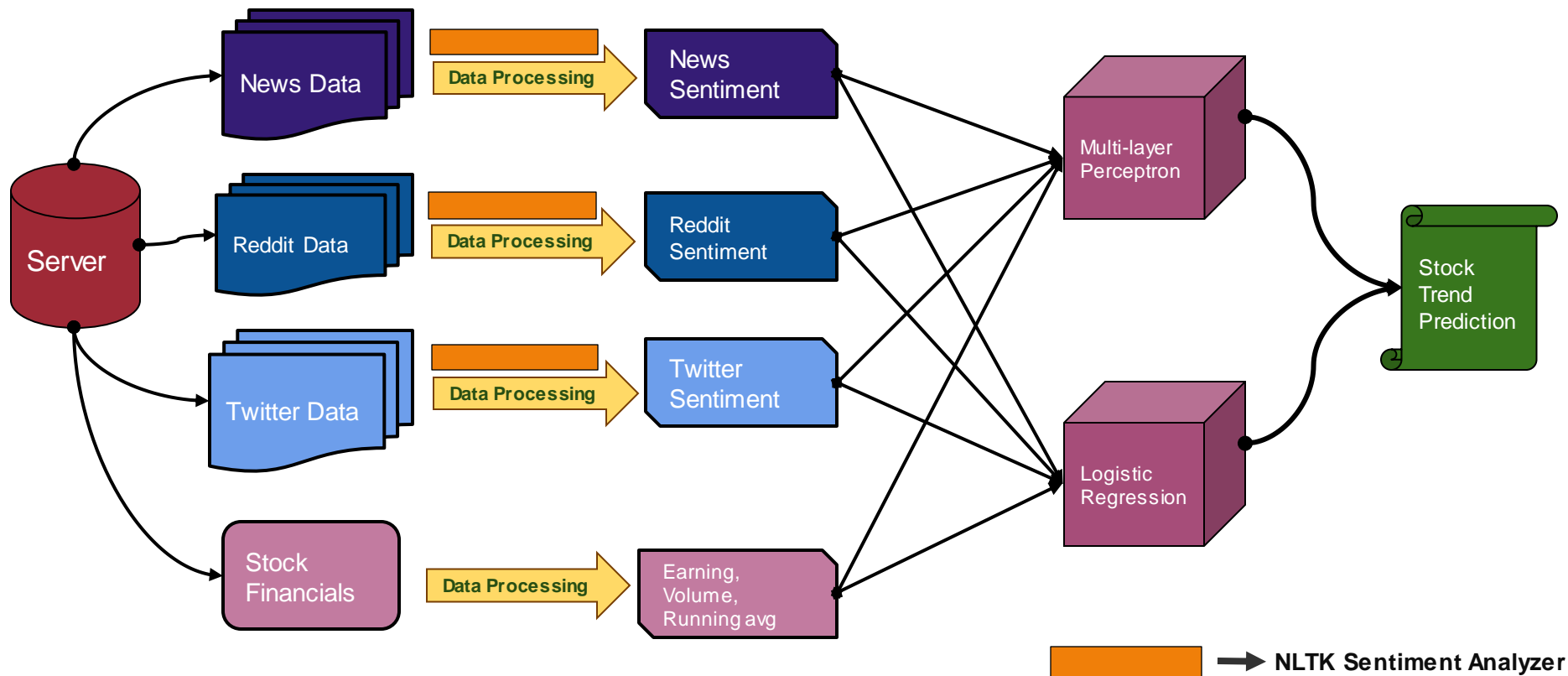
Predict trend for a wide range of stocks using sentiment from yahoo, twitter and reddit data as input.

Short Term	Mid Term	Long Term
7 days	40 days	90 days

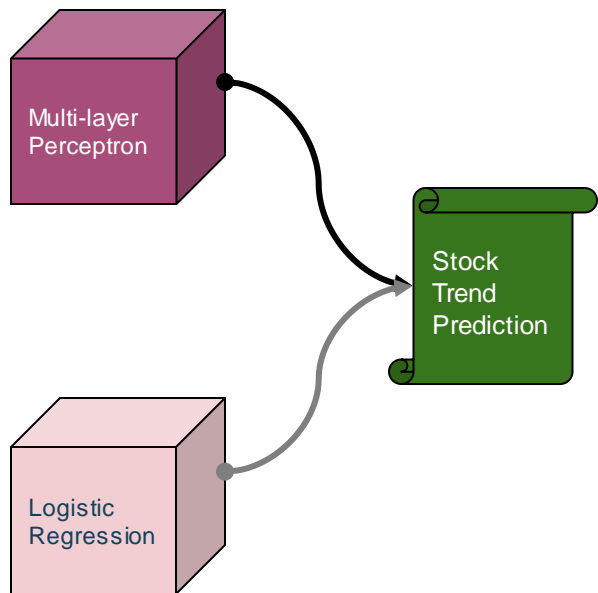
- Input:
  - Stock Financials
  - News Data
  - Social Media Data
    - 
    - 
- Output:
  - Market trend in short, medium and long term
    - Regression
    - Classification



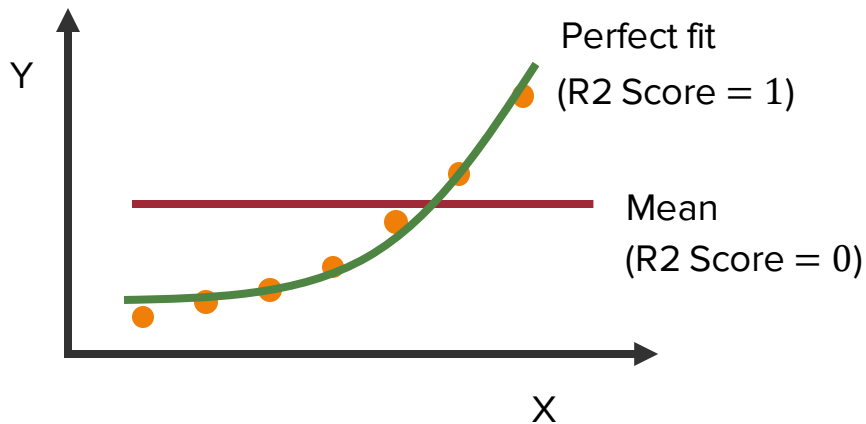
# Pipeline



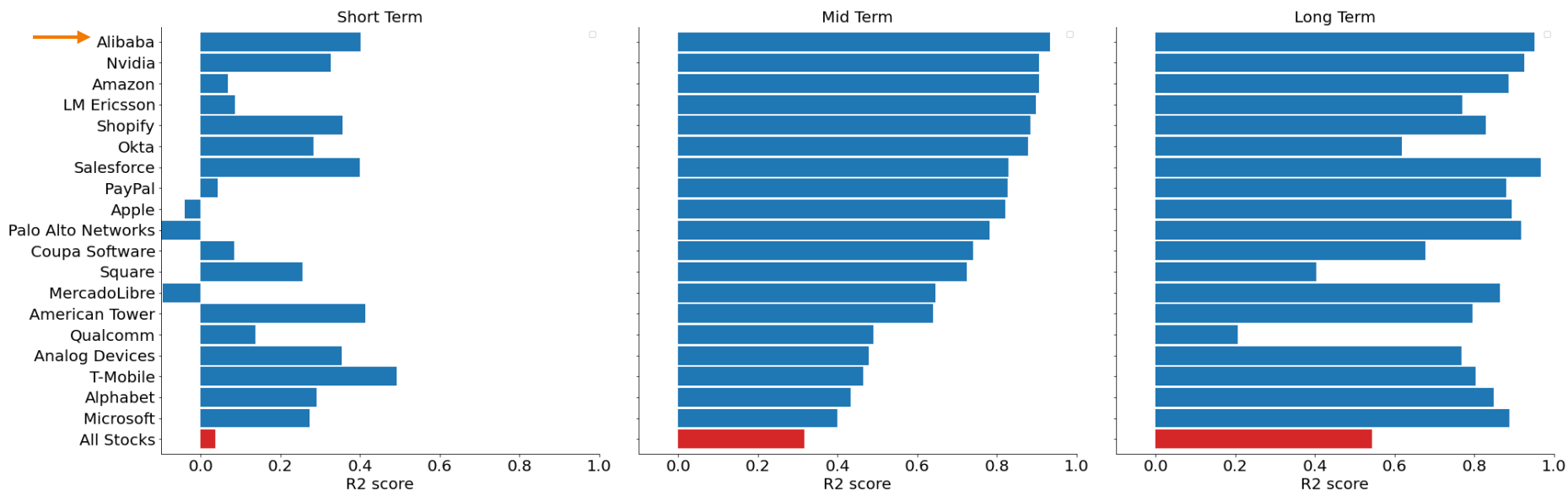
# Performance Metric: R2 Score



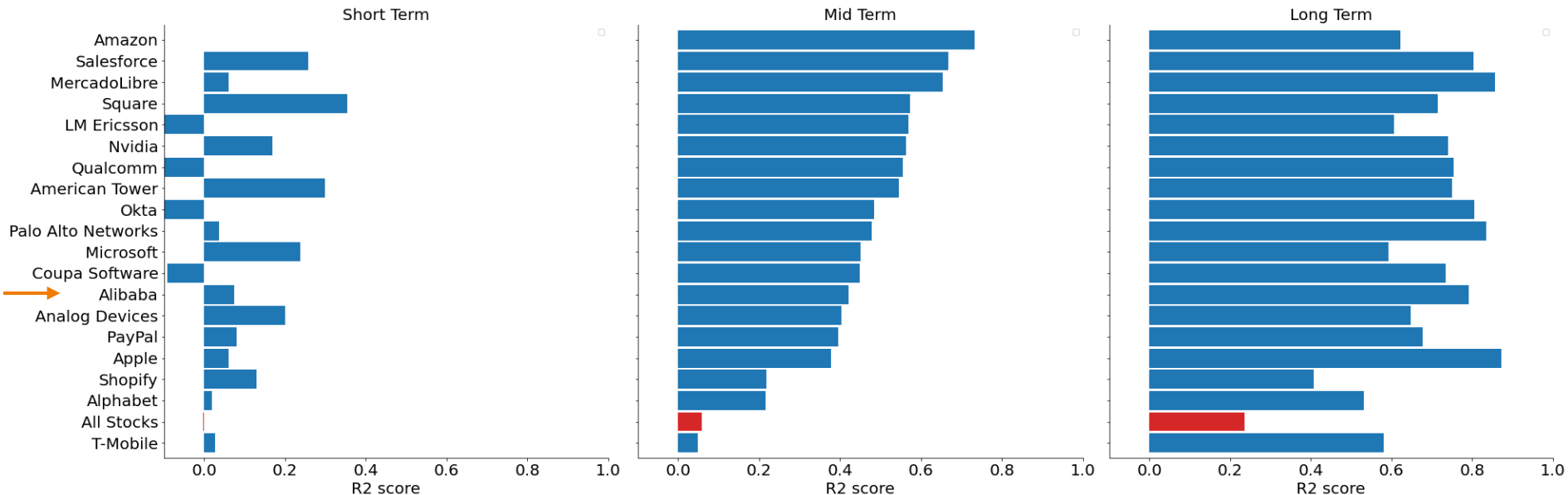
- R2 Score determines the accuracy of regression
- R2 Score  $\in [-\infty, 1]$



# Prediction accuracy with News sentiment

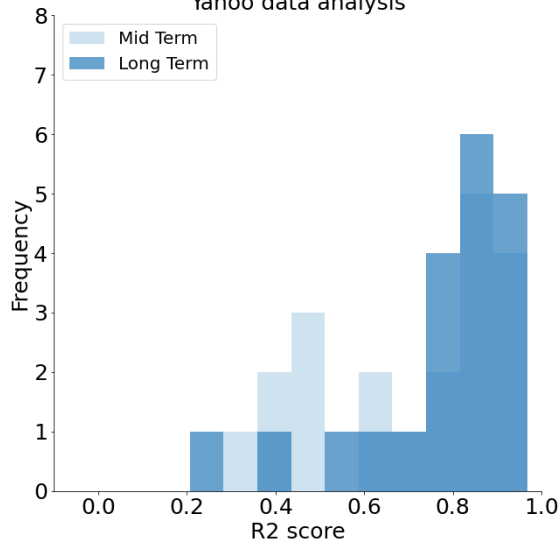


# Prediction accuracy with Reddit sentiment

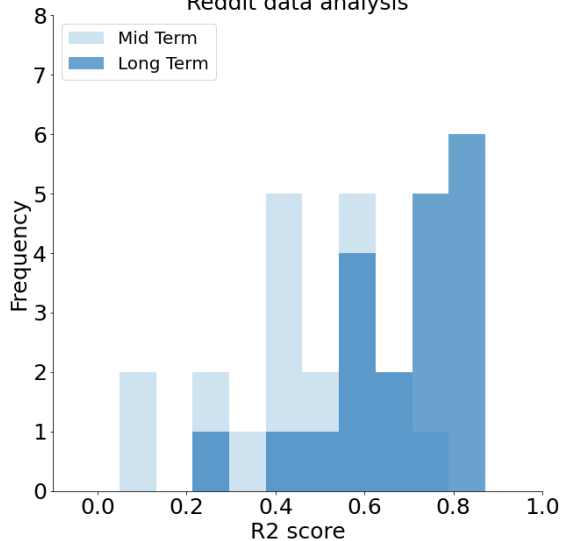


# Prediction accuracy with different sources

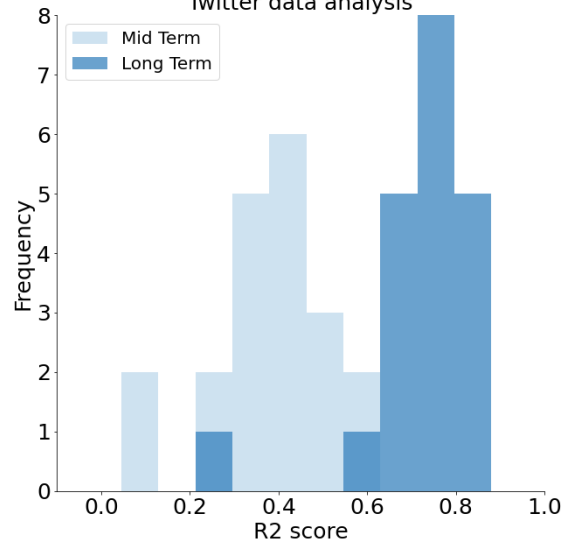
Yahoo data analysis



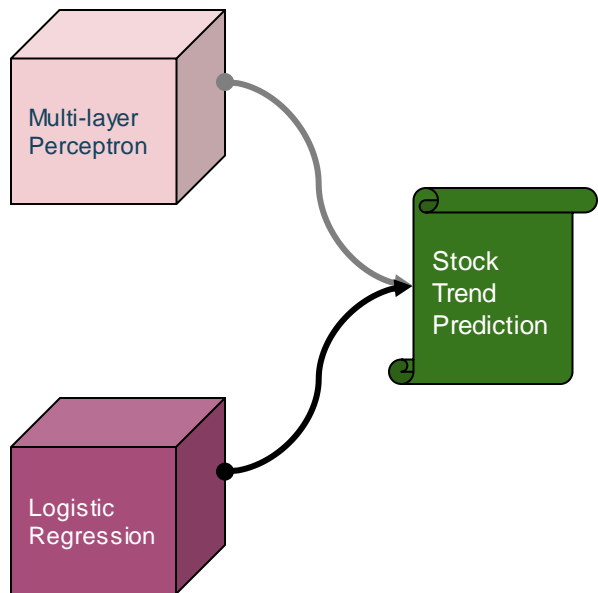
Reddit data analysis



Twitter data analysis



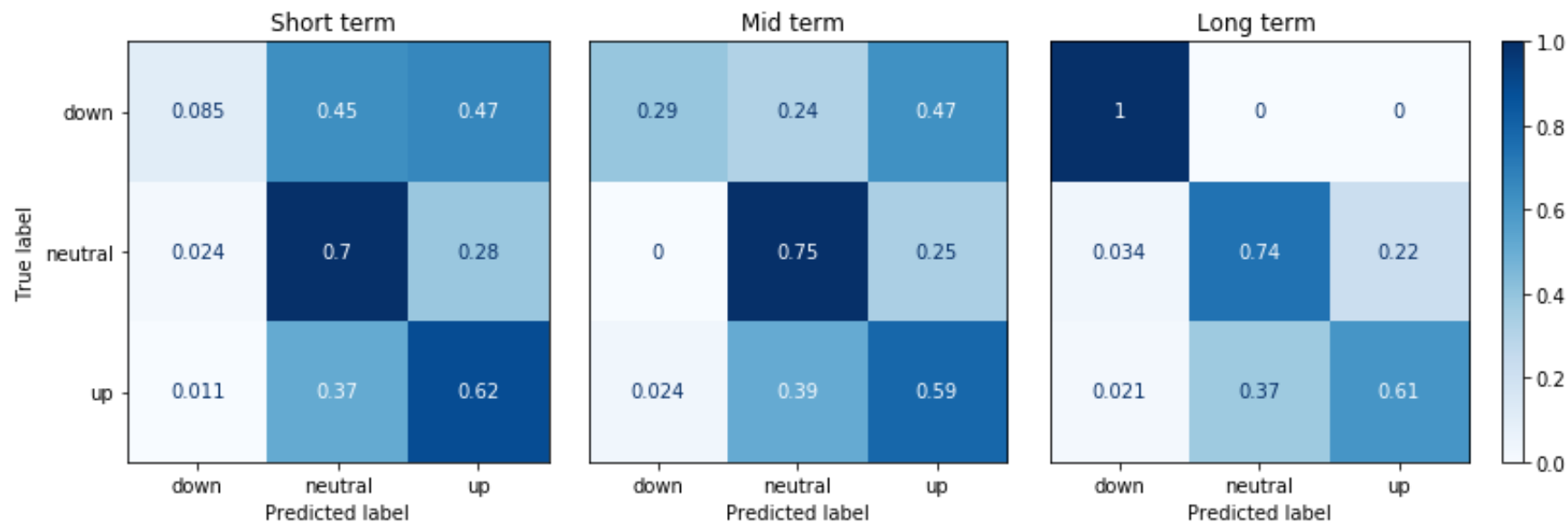
# Performance Metric: Confusion Matrix



- Confusion matrix is used to evaluate classification accuracy

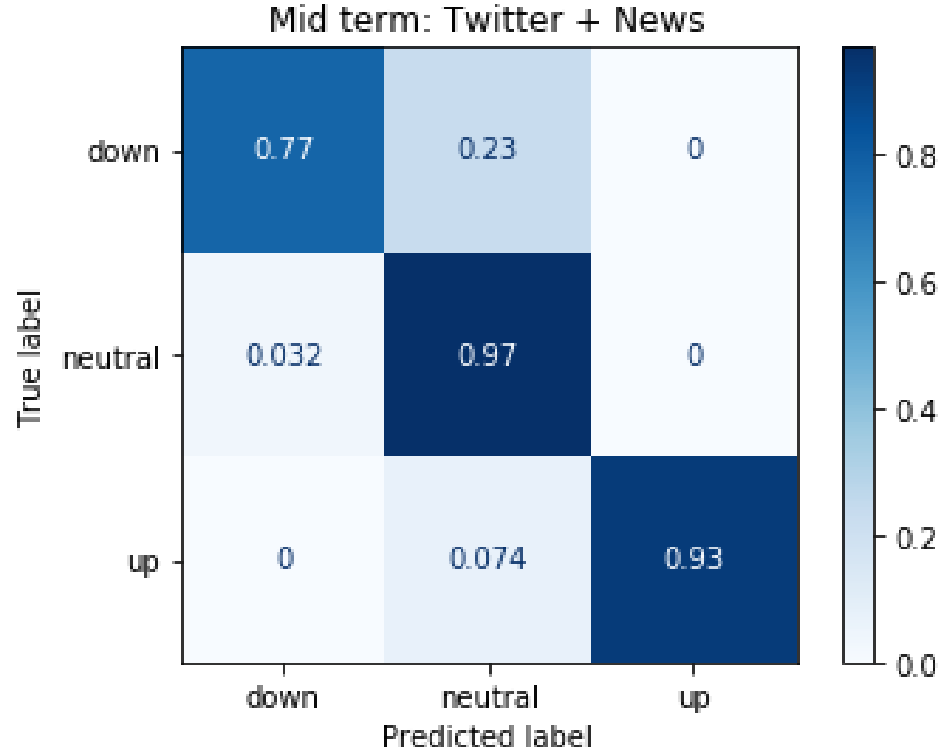
	Predicted (0)	Predicted (1)
True (0)	True Positive	False Positive
True (1)	False Negative	True Negative

# Logistic regression: News sentiment





# Prediction with Twitter + News Sentiment



## Challenges faced

- Limitations of gathering data from the API's we were using
- Volume of data varies for different sources
- Positive bias in sentiment

## Next steps

- Test with LSTM based model to see the accuracy
- Develop a reinforcement learning based trading agent
- Develop better scrappers

# Conclusion

We see  
correlation between  
stock price trend and  
sentiment to help you  
make informed decision  
on your investment

