THE DEPARTMENT OF
COMPUTER SCIENCE
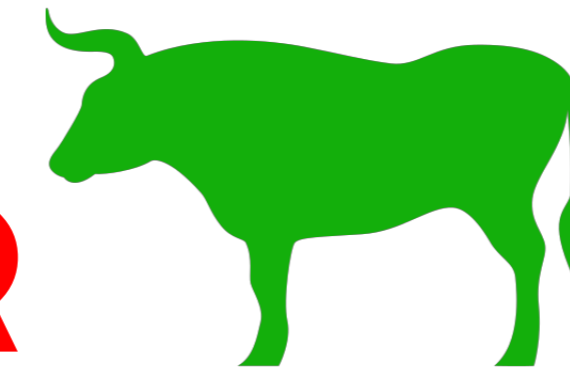& ENGINEERING
計算機科學及工程學系

BULL AND BEAR

A SYSTEM FOR COMPARATIVE ANALYSIS OF DIFFERENT STOCK PREDICTION METHODOLOGIES FOR BEGINNER INVESTORS
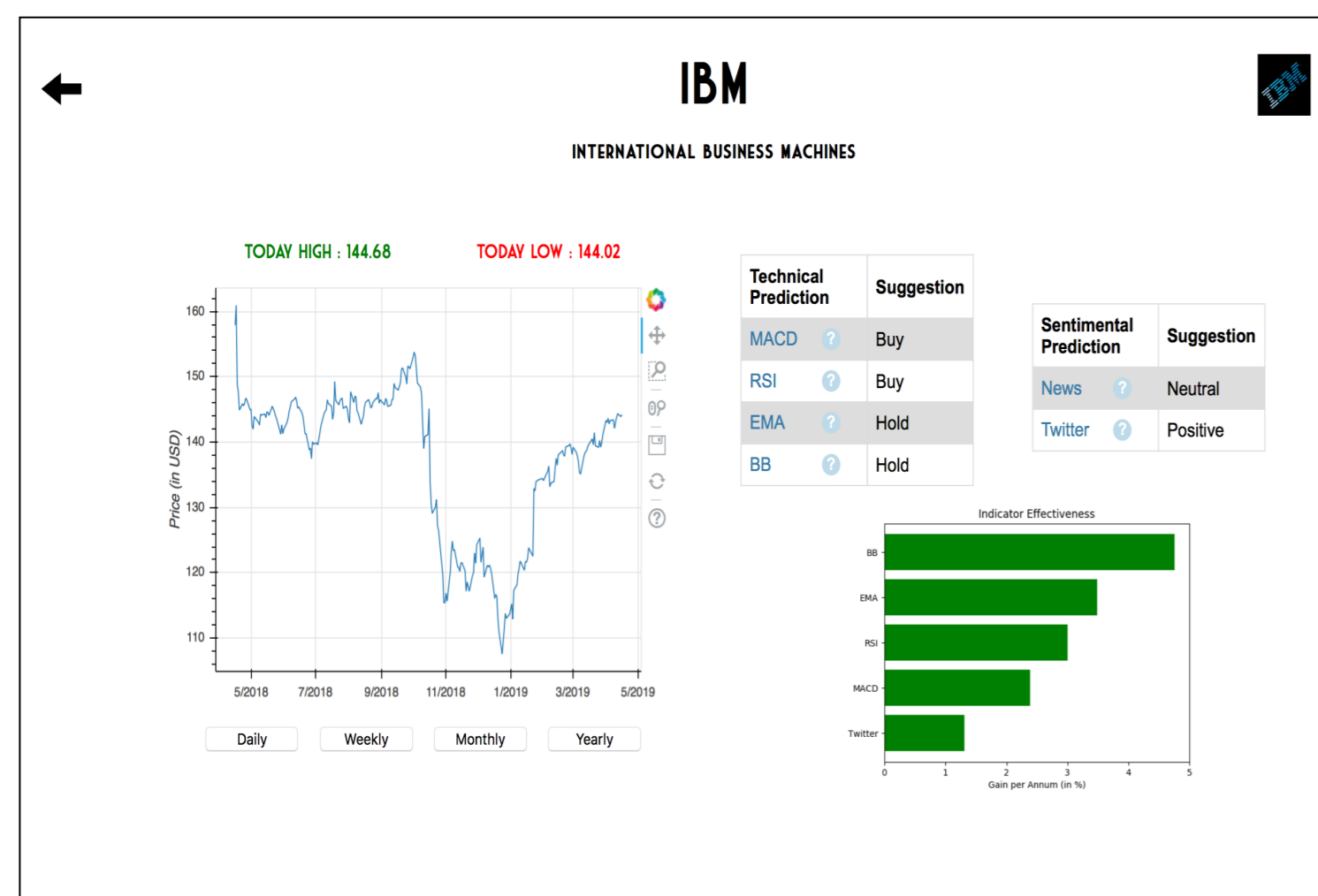
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INTRODUCTION

Investing in stocks, if done correctly, is a very effective way to earn passive income.

However, for an average individual from a non-finance background, it can be confusing, overwhelming and even dangerous if given the wrong advice. No current system exists that compares and analyses the current methods for effectiveness and educates beginner and interested investors about investing.

BULL AND BEAR AIMS TO

1. Provide predictions made by different indicators within Technical Analysis
2. Perform Sentiment Analysis on financial news and tweets related to the stocks
3. Compare these techniques with each other and inform the user about the effectiveness of each prediction technique over a period of time
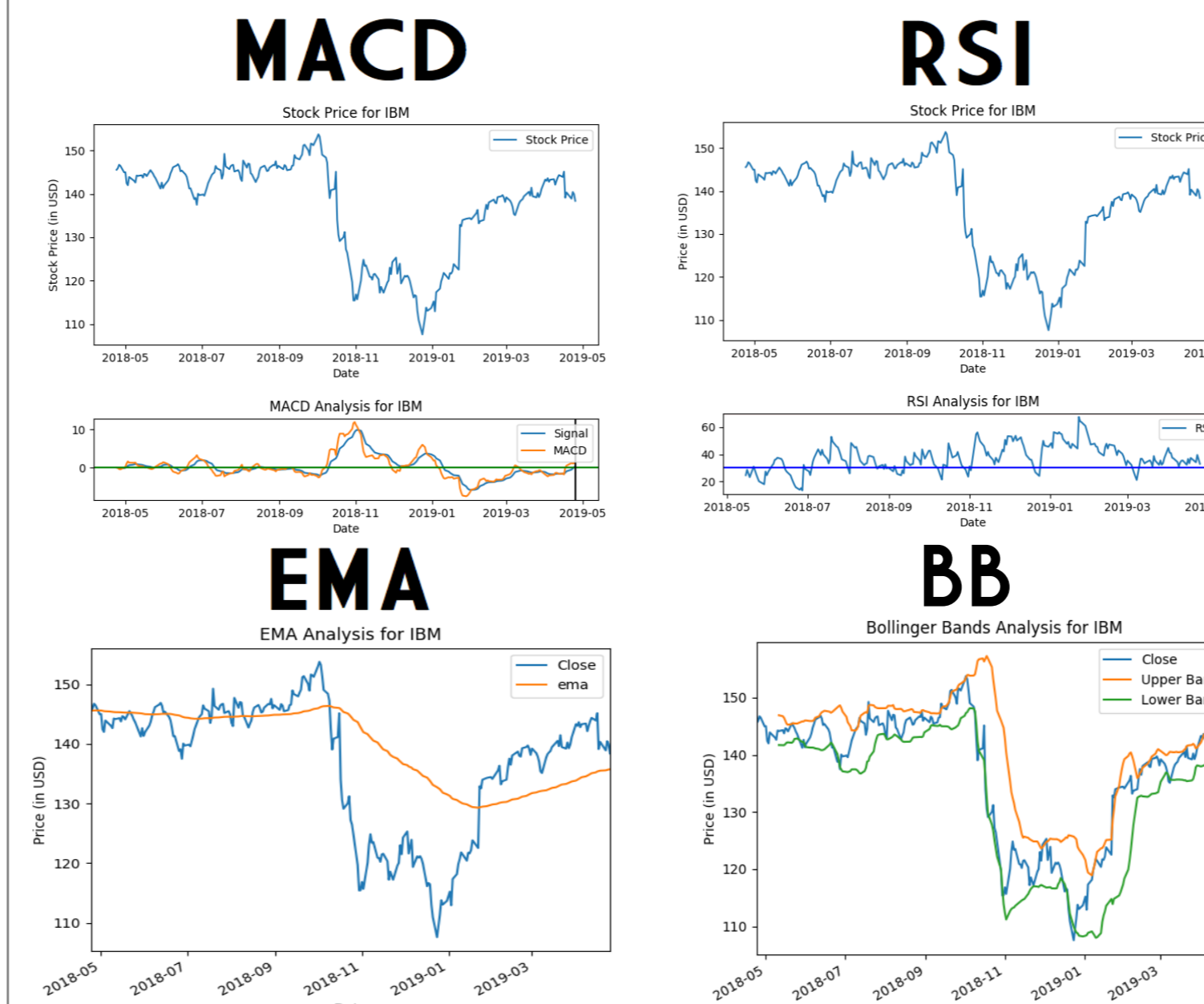4. Encompass all the above features in an aesthetically pleasing and intuitive user interface
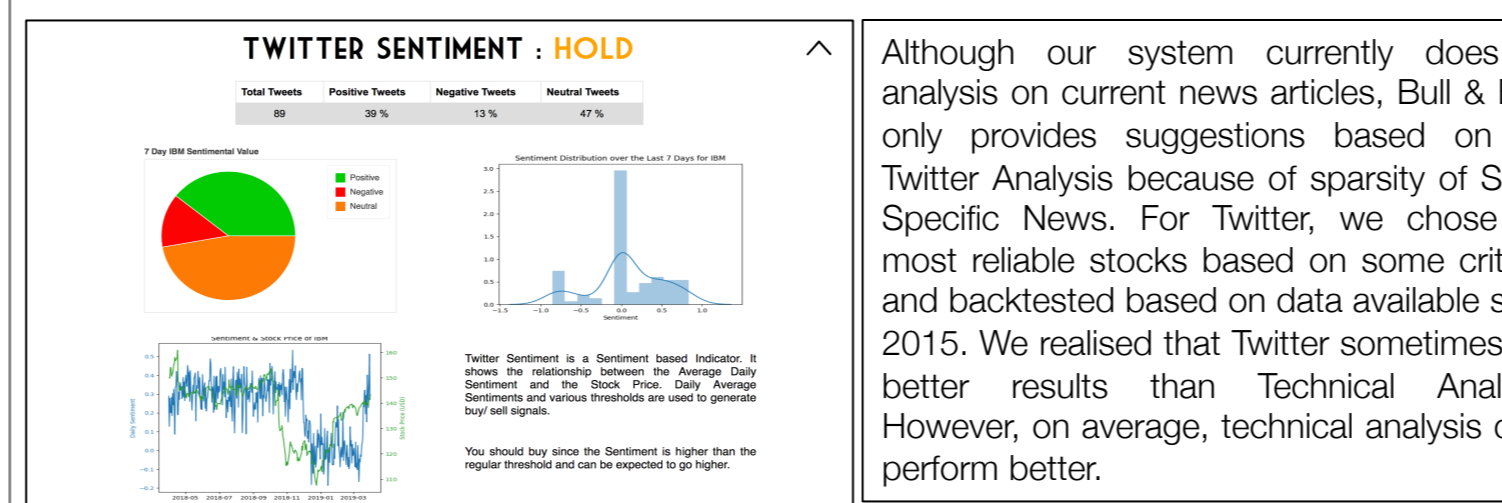

INDICATORS

We selected the following four technical indicators based on their effectiveness, popularity and simplicity in terms of understanding, coding and implementation. We ensured that these indicators encompass all the broader types of technical analyses including volatility, trend and momentum indicators as well as leading and lagging indicators. We backtested different parameters for 13 years of past to find the optimal ones for Dow Jones stock.
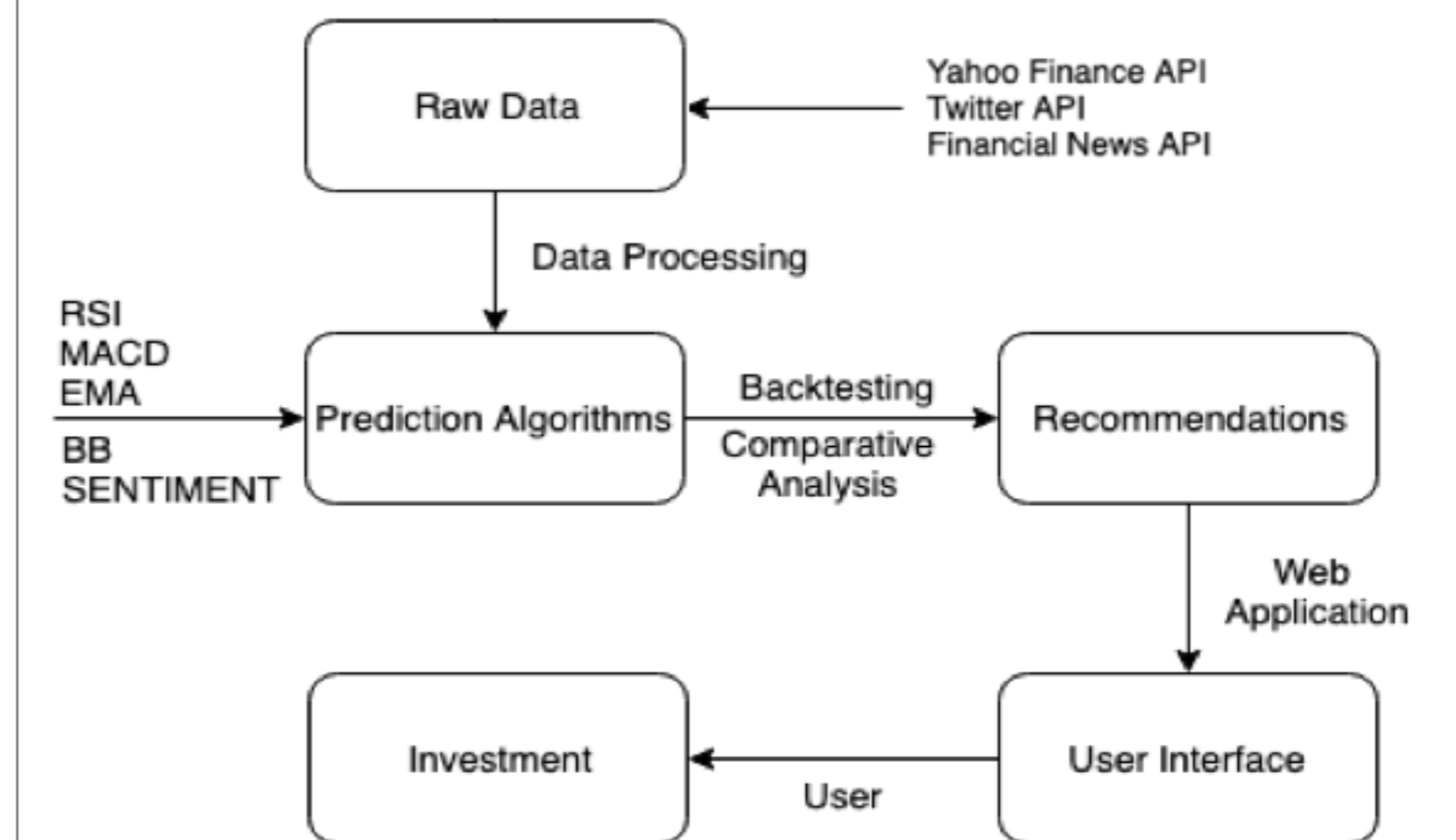
Our system provides users with
1. The recommendation - (BUY/HOLD/SELL) for each indicator
2. How effective the indicator has been for the specific stock

MACD

RSI

EMA

BB

SENTIMENT

Although our system currently does an analysis on current news articles, Bull & Bear only provides suggestions based on the Twitter Analysis because of sparsity of Stock Specific News. For Twitter, we chose the most reliable stocks based on some criteria, and backtested based on data available since 2015. We realised that Twitter sometimes has better results than Technical Analysis. However, on average, technical analysis does perform better.

METHODOLOGY

CONCLUSION

Our experiments in this aspect have indicated that generally used indicators with the standard parameters are not the optimal ways to predict stock price movement and trade. Parameters for each indicator can be customized for each stock to get the best returns. Additionally, even the relative effectiveness of different indicators will change depending on the particular stock. This leaves room for further customization of technical analysis for each stock or index to ensure the gains are maximized.

Indicator	Finalized Parameters	Yearly return (for the past 13 years)
EMA	Period - 128 days	10.48%
MACD	1st period – 18 days 2nd period – 4 days	7.95%
RSI	Period – 15 days Upper Band – 78 Lower Band – 37	9.69%
Bollinger Bands	Period – 14 days Standard deviation – 1.7	8.39%