



# **St. Francis Institute of Technology**

## **Department of Computer Engineering**

**Mini Project Title: (*STOCK MARKET PREDECTION*)**

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# Introduction

In Stock Market Prediction,

- The aim is to predict the close price value of the financial stocks of a company.
- The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values.
- The goal of this study is to develop and evaluate a decision-making system that could be used to predict close price which will help the investor to make choices.



## **Application:**

- The use of external data sources along with traditional metrics leads to improve the prediction performance;
- The prediction models benefit from the feature selection and dimensional reduction techniques.



# Problem Statement

- People in times found it very difficult to invest on stocks because they didnt have any idea of viewing or purchasing stocks and thus it ends up being a huge loss for them.
- We want to look into our future with inner most desire as we reduce or decrease risk factor.

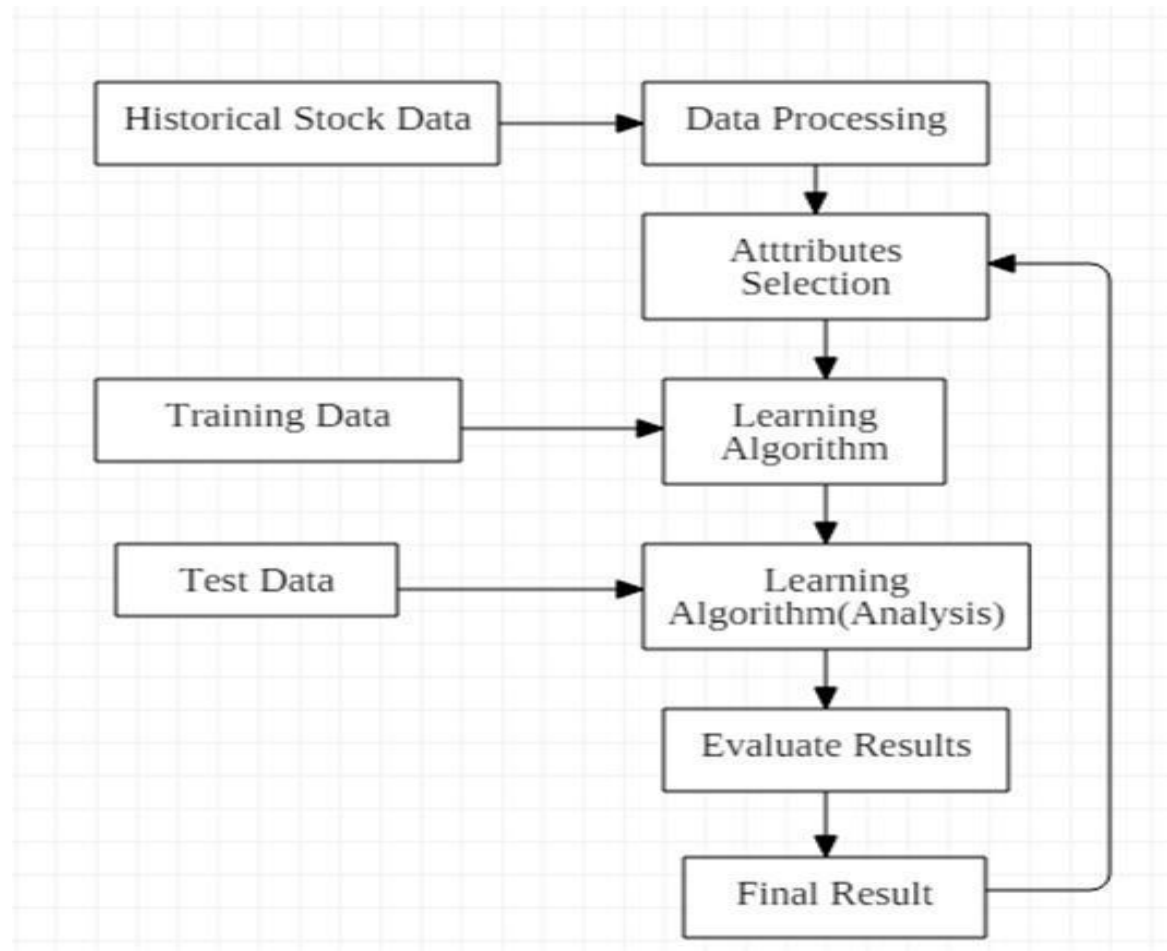


# Proposed solution

- The stock market is a vast array of investors and traders who buy and sell stock pushing the price up and down.
- The main functionality of our project is that it will help us to predict the actual and closing price of any stock along with the actual and predicted graph.
- We have used LSTM model which can not only process single data points but also entire sequence of data.



# Work Flow of the system



# Algorithm with Implementation Details

## Implementation of LSTM model

- In this project, we have used LSTM model i.e long short term memory model for our stock prediction.
- Long short term memory model is an artificial neural network architecture used in the field of deep learning and unlike standard feed forward neural network.
- LSTM model is very popular in time series forecasting and also for processing data.
- LSTM are used for prediction problems and have proven to be extremely effective.

```
#Build the LSTM model
model = Sequential()
model.add(LSTM(50, return_sequences=True, input_shape= (x_train.shape[1], 1)))
model.add(LSTM(50, return_sequences= False))
model.add(Dense(25))
model.add(Dense(1))
```





## Implementation of RMSE model

- Root mean square error takes the difference for each observed and predicted value.
- **Lower** values of **RMSE** indicate better fit. **RMSE** is a good measure of how accurately the model predicts the response, and it **is the** most important criterion for fit if the main purpose of the model is prediction.
- There is no absolute good or bad threshold, however you can define it based on your DV. For a datum which ranges from 0 to 1000, an **RMSE** of 0.7 is small.

```
#Get the root mean squarred error (RMSE)
rmse = np.sqrt( np.mean( predictions - y_test )**2 )
rmse

0.4026114702224731
```



# Experimental Setup

The datasource of our project is 'yahoo'.

## Performance Measure

- The average value of LSTM has an accuracy of 95%
- Our model has a accuracy of 92%

Close Price and Predicted Close		
	Close	Predictions
2021-04-20T00:00:00+05:30	133.1100	128.5201
2021-04-21T00:00:00+05:30	133.5000	128.9785
2021-04-22T00:00:00+05:30	131.9400	129.2857
2021-04-23T00:00:00+05:30	134.3200	129.3384
2021-04-26T00:00:00+05:30	134.7200	129.4526
2021-04-27T00:00:00+05:30	134.3900	129.5987
2021-04-28T00:00:00+05:30	133.5800	129.7149
2021-04-29T00:00:00+05:30	133.4800	129.7351
2021-04-30T00:00:00+05:30	131.4600	129.6946
2021-05-03T00:00:00+05:30	132.5400	129.4489
2021-05-04T00:00:00+05:30	127.8500	129.2147



# Results and Discussions

- The user entered the date to find the predicted price(128.80)
- The user entered the same date to find the close price(125.91)

The difference between them was quite small.

```
#Get the quote to find the predicted CLOSE price
apple_quote = web.DataReader( 'AAPL', data_source='yahoo',start='2012-01-01', end='2021-05-
#Create a new dataframe
new_df = apple_quote.filter(['Close'])
#Get teh last 60 daysclosing price values and convert the dataframe to an array
last_60_days = new_df[-60:].values
#Scale the data to be values between 0 and 1
last_60_days_scaled = scaler.transform(last_60_days)
#Create an empty list
X_test = []
#Append teh past 60 days
X_test.append(last_60_days_scaled)
#Convert the X_test data set to a numpy array
X_test = np.array(X_test)
#Reshape the data
X_test = np.reshape(X_test, (X_test.shape[0], X_test.shape[1], 1))
#Get the predicted scaled price
pred_price = model.predict(X_test)
#undo the scaling
pred_price = scaler.inverse_transform(pred_price)
print("The predicted price of next day is; ")
print(pred_price)
```

```
↳ The predicted price of next day is;
[[128.80728]]
```



```
20#Get the quote to find the close price of a given date
current_d=input('Enter Date to find out the close price:')
ds = input("Enter stock = ")
apple_quote2 = web.DataReader( ds , data_source='yahoo', start=current_d, end=current_d)
print(apple_quote2['Close'])
```

Enter Date to find out the close price:2021-05-11

Enter stock = AAPL

Date

2021-05-11     125.910004

Name: Close, dtype: float64



# Conclusion

- In this project, we tried to develop a prediction model for the stock market based on the technical analysis using LSTM stock market data.
- LSTM models are very powerful in sequence prediction problems because they are able to store past information.
- This could guide the future investors in the stock market to make profitable investment decisions whether to buy or sell or hold a share.
- They are able to keep track of context specific temporal dependencies between stock prices for a longer period of time while performing predictions.



# References

- Stock Market Prediction Using Hybrid Approach, Vivek Rajput
- Using Neural Networks to Forecast Stock Market Prices, Ramon Lawrence.
- <https://www.analyticsvidhya.com/blog/2020/10/create-interactive-dashboards-with-streamlit-and-python/>
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Thank you !!!  
Q & A ??

