Project Presentation

Trading Master using Python

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Outline

1. Introduction

We undertook this project to illustrate the significance of *Technology* and *Data Science* in the currency market and how we can take leverage it. In the past decade, we have witnessed an unprecedented rise of *Cryptocurrency* in the currency market.

Cryptocurrency is backed by *Blockchain Technology* and has been recognized as one of the most efficient and safest way of making transactions.

In this project we have utilized *Machine Learning* Algorithms and Time-Series for analysis and predictions using *Python* Programming Language.

2. Problem Statement

Time Series Data is the type of historical data, which resembles the group or observation of the data that have been collected over time according to the continuous period of time. It comprises of numerous method to study and analyze the data. And Further it can be help us to derive the trend of data set.

It basically represents the value of a particular variable at different point of time.

The Time Series Data generally consists of the following components: ***Level, Noise, Trend and Seasonality.***

3. Objectives

In this project, our main objective is to analyze the cryptocurrency data using different algorithms and to use that data to get meaningful insights about the cryptocurrencies. We will then use the results to find the most suitable cryptocurrencies for trading that can yield high profits to the traders in the future.
The analysis of cryptocurrencies consists of two main parts:

Fundamental Analysis : which involves analyzing a cryptocurrency's future on the basis of its current financial performance. In this, we take the intrinsic value of the asset(s) and try to assess all the important financial related aspects be it earnings, expenses, assets, liabilities, etc. Also in this we study on the overall market and industry conditions.

Technical Analysis : which involves visualizing the cryptocurrency data using various graphs and charts to identify the trends in it. In this basically we analyze the market indicators of the asset, such as market resistance, support, trend lines, momentum-based indicators etc. It helps us to develop charts and patterns of the cryptocurrency.

4. Concepts and Methods

- ***CoinMarketCap***: It is the largest cryptocurrency trading platform. We have utilized this platform for supplying the current market price(CMP) of the selected cryptocurrency as well as price over a certain period of time.
- ***Binance***: This platform provides us with the documentation and backend support for our UI. And also we have utilized this platform for extracting the dataset of the selected currency.

- **Long Short Term Memory Model(LSTM):** LSTM, also known as Long Short-Term Memory network, is the most commonly used Recurrent Neural Network for the analysis of time-series data. A simple RNN works fine with short-term dependencies. But while working with time series data, we require a neural network that is capable of dealing with long series of data. A LSTM network solves this problem by providing a long-term memory

5. Literature Survey

A Comparison of ARIMA and LSTM in Forecasting Time Series – With the rapid advancement on developing refined AI based strategies and specifically deep learning algorithms, these procedures are gaining popularity among scientists in the domain. The significant question is then how precise and powerfully these recently discovered methodologies are when compared with the conventional strategies.

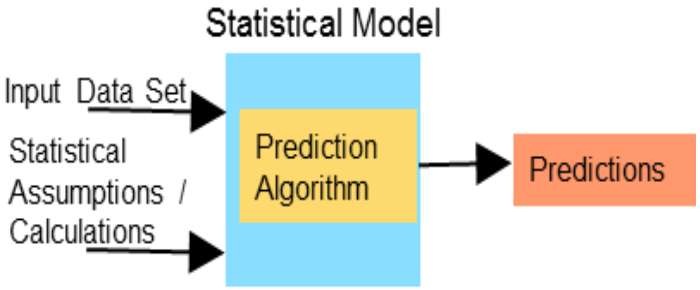
The paper compares the accuracy of ARIMA and LSTM, as representative systems when predicting time series data. LSTM-based models outperform ARIMA-based models with a high margin. These two methodologies were executed and applied on a set of financial data and the outcomes showed that LSTM was superior to ARIMA.

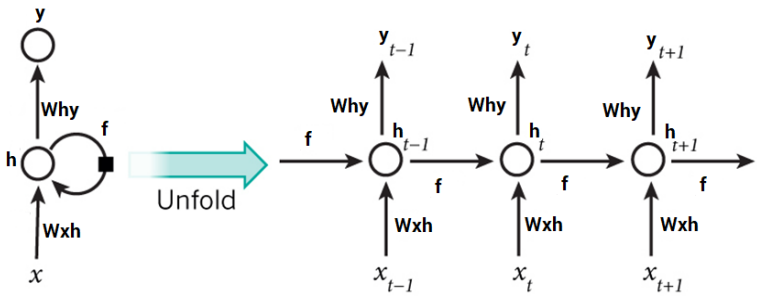
Furthermore, the LSTM-based algorithm improved the prediction by 85% on average compared to the ARIMA-based algorithm. The work depicted in this paper advocates the benefits of applying deep-learning based algorithms and methods to the financial aspects and financial information.

6. Tools and Languages

- **PyCharm**
- **CoinMarketCap**
- **Binance**
- **Long Short Term Memory Model (LSTM)**
- **Time Series Analysis**

7. Process and Architecture





Statistical Model **LSTM Model**

8. Implementation

User Interface

8. Implementation

1. CoinMarketCap Application

- This application allows an investor to view this data with ease.
- It uses the *listings* API to get the latest data from the website.
- To make the data more understandable, the data is filtered based on the several conditions and the data of the top 100 cryptocurrencies is only displayed to the user at a time.

2. Portfolio Calculator

- This application tells the current value of the cryptocurrency in our portfolio in US Dollars
- The Current value of the entire portfolio will also be displayed to help the investor in keeping a track of his investments.

9. Results

```
"D:\Personal Documents\TradingSystem\Scripts\python.exe" C:/Users/gupta/PycharmProjects/TradingSystem/Gui.py
Press:
1. Sort by Name of the CryptoCurrency
2. Sort by Symbol of the CryptoCurrency
3. Rank by Price of the CryptoCurrency
4. Rank by Volume of the CryptoCurrency
5. Rank by MarketCap of the CryptoCurrency
6. Rank by Change in the last 1 hour
7. Rank by Change in the last 24 hours
8. Rank by change in the last 7 days

Choose option: 7
```

Name	Symbol	Price	Volume	MarketCap	Change 1h	Change 24h	Change 7d
Thingschain	TIC	0.0	0	4186.600576	-0.140457	98.332258	-0.460733
FUZE Token	FUZE	6.364969	36042.513803	4769.999041	-20.431823	97.834256	-17.740751
Friendz	FDZ	0.000182	34662.537037	93779.203261	-0.142902	97.018142	99.862991
NestEGG Coin	EGG	5.6e-05	0.197792	2369.360651	-0.418581	96.195603	104.976324
ReddCoin	RDD	0.00014	52570.838111	4256252.740547	0.014932	94.429337	66.69059
Areon Network	AREA	0.039284	4776108.753558	0	-5.468587	93.979761	138.204993
PigsCanFly	PORK	0.844674	195938.587185	0	-0.069056	90.431916	91.881851
Smartshare	SSP	1.1e-05	551.505678	110016.394128	0.014932	9.991454	0.014354
CoinX	CNX	0.004385	170258.042844	0	-1.578844	9.988943	45.892358
CONUN	CON	0.00663	365688.094829	19208982.479154	4.970484	9.936478	6.097722
AnimalFam	TOTOFO	0.0	18429.043072	0	-0.053618	9.899013	-30.372336
Planet NFT	PNFT	0.000203	56545.335678	0	-2.761931	9.894059	-41.053641

Name	Quantity	Buy Price	Current price	Profit %	Change 1h	Change 1d	Change 7d
Bitcoin	500.0	8400.567	28092.9658916028	234.42	0.07346832	-1.67892658	2.97952506
Neo	1000.0	10.456	10.193739808946475	-2.51	-1.51316008	-2.79992021	-2.78731775
BitShares	5000.0	0.035	0.009898160442669456	-71.72	-0.15025496	-1.52791549	-2.15798788
Jetcoin	500.0	0.00724	0.0028048568000886643	-61.26	66.44766528	63.7905802	290.38937817
ShineChain	25.0	0.0004567	7.974564407550109e-06	-98.25	0.0	0.0	-3.41932559
ROAD	800.0	0.02234	4.9806701837474446e-05	-99.78	0.0	0.0	-27.5338813

PORTFOLIO VALUE : $ 14056727.62

TOTAL PROFIT : 233.81 %

TOTAL PROFIT (USD) : $ 9845791.62

8. Implementation

3. Price Alert Application

- This application alerts the investor about any change in the prices of cryptocurrencies.
- This application can also run in background allowing the user to get continues price alerts and will make a Beep(Alert) sound whenever the prices fluctuate or cross limits.

4. Simple Data Analyzer

- It is a statistical application that helps the investor to understand the cryptocurrencies better, the trends of change between them so that he/she can make appropriate calculations before investing their money in these digital currencies.
- The data in this application is sorted and displayed at every iteration in the output of application.

9. Results

```
Bitcoin price WENT UP. Current Price is $ 28404.453843
Neo price DROPPED. Current Price is $ 10.220601
JetCoin price DROPPED. Current Price is $ 0.002834
ShineChain price DROPPED. Current Price is $ 8e-06
ROAD price DROPPED. Current Price is $ 5e-05
```

Symbol	Score	2m_ch	6h_ch	12h_ch	30d_ch	1y_ch	30m_MA	30d_MA	Price
RADBTC	4.25	-2.06	20.26	38.81	-5.1	20.16	-5.4	-5.57	0.0001377
IDEXBTC	2.5	0.0	0.85	2.9	-1.11	-0.28	-0.75	-0.79	3.55e-06
LTCBTC	3.5	-0.06	0.19	1.65	-0.06	0.38	-0.11	-0.11	0.003138
BTCUPUSDT	6.0	0.26	0.69	1.12	1.1	0.57	1.17	1.17	5.873
BTCGBP	7.25	-0.1	0.4	0.96	0.5	0.38	0.5	0.52	22688.0
BTCBRL	7.5	-0.06	0.51	0.87	0.46	0.47	0.53	0.54	142443.0
BTCTUSD	8.25	0.13	0.33	0.77	0.6	0.32	0.58	0.58	28150.36
BTCEUR	8.25	0.1	0.22	0.66	0.5	0.15	0.52	0.52	25744.8
BTCUSDC	8.25	0.15	0.21	0.58	0.59	0.25	0.57	0.57	28178.17
BTCDAI	7.5	0.0	0.53	0.57	0.6	0.53	0.56	0.58	28192.69

Symbol	Score	2m_ch	6h_ch	12h_ch	30d_ch	1y_ch	30m_MA	30d_MA	Price
QLCBTC	2.5	5.0	-16.0	-30.0	5.0	-16.0	2.94	3.11	2.1e-07
BTCUPUSDT	6.0	0.26	0.69	1.12	1.1	0.57	1.17	1.17	5.873
BTCUAH	7.25	0.0	0.23	0.52	1.0	0.23	0.65	0.68	1054441.0
BTCZAR	8.25	0.18	0.57	0.17	0.91	0.76	0.71	0.71	536890.0
BTCTRY	5.5	-0.15	0.27	-0.08	0.72	0.25	0.42	0.41	581053.0
BTCAUD	7.25	-0.08	0.62	0.19	0.67	0.62	0.56	0.59	42216.22
BTCDAI	7.5	0.0	0.53	0.57	0.6	0.53	0.56	0.58	28192.69
BTCTUSD	8.25	0.13	0.32	0.77	0.59	0.31	0.57	0.57	28148.66
BTCUSDC	8.25	0.13	0.19	0.56	0.57	0.23	0.55	0.55	28172.55
BTCBUSD	8.0	0.11	0.19	0.49	0.56	0.18	0.54	0.54	28171.49

8. Implementation

5. Advanced Data Analyzer

- It starts to analyze the data of these cryptocurrencies and calculates a number of parameters that are essential to monitor the performance of the cryptocurrency.
- The analyzer also runs a ranking algorithm which assigns a score to each and every cryptocurrency.

6. Predictor and Price Forecasting Application

- The data fetched using the API is put to train a Neural Network model using LSTM layers.
- When the price forecasting application runs, firstly it extracts the historical data of the selected cryptocurrency and then it tries to predict the future value of the cryptocurrency.
- It informs the user whether the selected cryptocurrency will return profit or loss in the future.

9. Results

```
Found 35 CryptoCurrencies that are worth Investing
Getting the Data.....
Running Analyzer.....

Tue May  2 20:06:10 2023
```

Symbol	Score	2_m_ch	5_m_ch	15_m_ch	30_m_ch	1_hr_ch	10_m_MA	20_m_MA	50_m_MA	100_m_MA	8_hr_ch	1_day_ch	3_day_ch	5_day_ch	7_day_ch	10_day_ch
RAD	6.45	0.68	-0.22	-2.69	-7.9	-9.83	-0.62	-2.94	-6.23	-8.02	41.95	-9.9	-1.3	15.5	33.1	43.3
BTCDOWNU	5.8	-0.14	0.86	-1.59	-3.02	-2.62	0.15	-0.75	-1.89	-2.02	-2.22	-1.8	-2.6	-2.6	-2.8	-2.8
XMR	5.7	0.04	0.35	-0.75	-1.0	-1.13	0.06	-0.36	-0.81	-0.96	-0.18	-1.1	-1.9	-1.0	-1.3	-0.3
ARB	5.1	0.04	0.21	-0.32	-0.23	-0.74	-0.02	-0.19	-0.34	-0.45	-0.47	-0.5	-0.6	-0.4	-0.3	-0.6
SOL	5.1	0.14	0.21	-0.26	-0.19	-0.57	0.06	-0.09	-0.26	-0.48	-0.17	-0.8	-0.3	-0.2	-0.1	-0.4
BNB	5.0	-0.13	0.18	-0.71	-1.19	-1.52	-0.06	-0.4	-0.92	-1.15	-2.78	-1.4	-1.5	-1.6	-2.2	-3.0
WBTC	4.8	0.01	0.01	-0.01	-0.02	-0.02	0.01	0.0	-0.01	-0.01	-0.06	-0.0	-0.0	-0.0	-0.0	-0.1
XRP	4.7	0.0	0.31	-0.61	-0.91	-1.21	0.12	-0.25	-0.79	-0.91	-1.63	-1.0	-1.8	-1.9	-1.2	-1.6
EDU	4.45	0.05	-0.14	-0.38	-0.18	-1.23	-0.14	-0.18	-0.32	-0.79	-1.7	-1.5	-3.5	-1.4	0.0	-1.6
MATIC	4.4	-0.06	0.18	-0.18	-0.26	-0.44	0.09	-0.06	-0.23	-0.32	-0.64	-0.4	-0.6	-0.5	-0.4	-0.7

```
Tue May  2 20:06:12 2023
```

Symbol	Score	2_m_ch	5_m_ch	15_m_ch	30_m_ch	1_hr_ch	10_m_MA	20_m_MA	50_m_MA	100_m_MA	8_hr_ch	1_day_ch	3_day_ch	5_day_ch	7_day_ch	10_day_ch
RAD	6.45	-0.07	0.98	-3.6	-8.22	-10.31	-0.4	-2.58	-6.13	-8.0	41.84	-10.0	-1.4	15.4	33.0	43.2
BTCDOWNU	5.6	0.0	0.81	-1.77	-3.02	-2.48	0.2	-0.63	-1.84	-2.01	-2.22	-1.8	-2.6	-2.6	-2.8	-2.8
SOL	5.1	0.01	0.21	-0.21	-0.24	-0.69	0.07	-0.07	-0.23	-0.46	-0.15	-0.7	-0.3	-0.1	-0.1	-0.4
BNB	4.9	0.0	0.07	-0.74	-1.22	-1.49	-0.03	-0.35	-0.89	-1.14	-2.78	-1.4	-1.5	-1.6	-2.2	-3.0

```
                                    HISTORY OF BITCOIN ($)
```

Symbol	Price 1 Day Ago	Price 10 Days Ago	Price 15 Days Ago	Price 20 Days Ago	Price 30 Days Ago
	01/05/2023	22/04/2023	17/04/2023	12/04/2023	02/04/2023
BTCUSDT	28068.26	27816.85	29430.27	29888.07	28171.87

```
Current Price: $ 28276.25

Enter the Amount of BITCOIN :
5

Current Value: $ 141381.25

Predicting the Future Value of BITCOIN .................
Fetching Results ...............

                Future Predictions for your Investment in BITCOIN
```

Date	Duration	Predicted Price	Profit/Loss	Profit/Loss %	Predicted Value
03/05/2023	After 1 Day	27928.738	Loss	1.23	139643.691
12/05/2023	After 10 Days	28108.582	Loss	0.59	140542.91
17/05/2023	After 15 Days	29447.535	Profit	4.14	147237.676
22/05/2023	After 20 Days	28507.941	Profit	0.82	142539.707
01/06/2023	After 30 Days	28274.678	Loss	0.01	141373.389

8. Implementation

7. Candlestick(s) Application

• This application is used to put the data in graphical representation.

• The user can select any cryptocurrency and visualize the performance of the particular cryptocurrency over the past years.

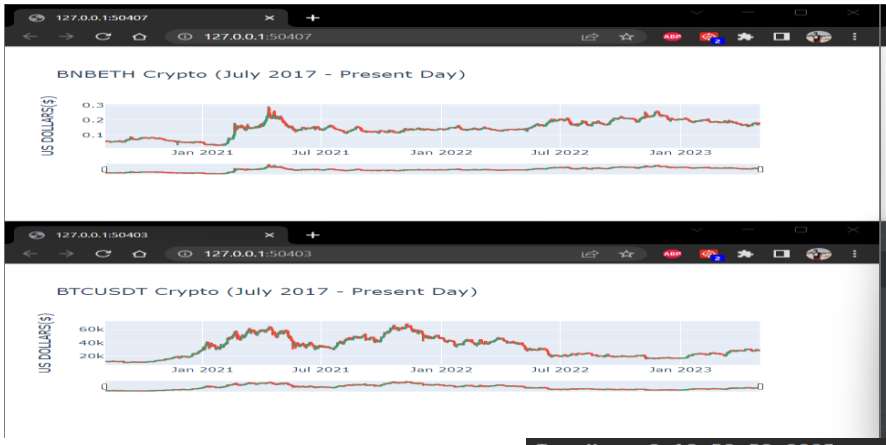
• A single candlestick graph provides a lot of information to the user such as the daily open, close, high and low price of the cryptocurrency.

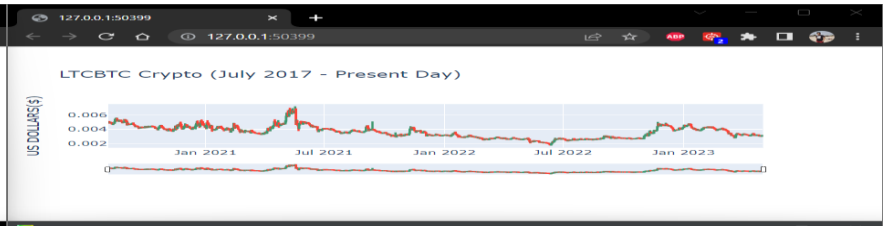
8. Pump and Dump Trading Bot

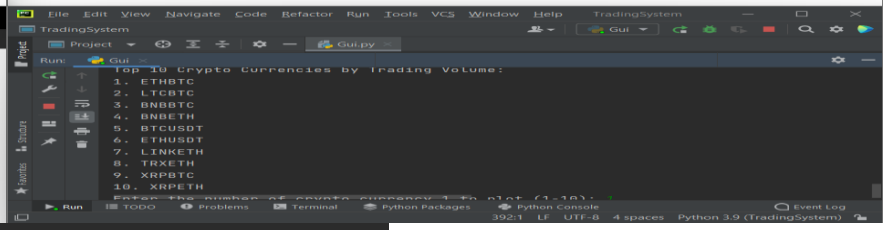
• It is an automatic buying and selling bot that reduces the efforts of investors and trades the digital currency automatically as per the instructions.

• Trading bot is a useful application for doing automated buying and selling operations as manually buying and selling at a very particular moment of time is a tedious task and requires a lot of accuracy.

9. Results








```
Tue May  2 19:58:59 2023
Buy Order: ETHBTC at: 0.06826 from 0.06500900
Order Placed
Filling Order...
Order Filled


Buying 0.8075 Quantity on Tue May  2 19:59:08 2023

Buying 0.457 Quantity on Tue May  2 19:59:09 2023

Buying 0.8631 Quantity on Tue May  2 19:59:09 2023

Selling 0.0933 Quantity on Tue May  2 19:59:10 2023

Selling 0.5827 Quantity on Tue May  2 19:59:10 2023

Buying 0.2488 Quantity on Tue May  2 19:59:11 2023

Buying 0.0863 Quantity on Tue May  2 19:59:12 2023

Buying 0.2969 Quantity on Tue May  2 19:59:13 2023

Buying 0.8175 Quantity on Tue May  2 19:59:14 2023

Selling 0.674 Quantity on Tue May  2 19:59:14 2023

Buying 0.6805 Quantity on Tue May  2 19:59:15 2023
```

10. Conclusion and Future Work

In this project, we have made an API to collect the dataset of the user selected cryptocurrency on real- time basis from two online trading platforms, namely Binance and CoinMarketCap, post data collection, we employ the data in LSTM and this model helps us to analyze the dataset and find out the trend of the particular cryptocurrency. This analysis is done on the basis of numerous factors in term of volume traded in the last 24 hours, 52-weeks high, 52-weeks low, plunging patterns and other fundamental aspects.

Also, in the CoinMarketCap API we have provided the user with the option to show the list of cryptocurrency on the basis of factors such as Name, Symbol, Price, Volume, Market Cap and Change in Price. It helps user to get meaningful insights. Further, in the project, there is an advance data analyzer which employ the period change and moving average techniques to analyze the data.

10. Conclusion and Future Work

Multi-User Application

The current version of the trading system can support only a single user. Perhaps in the update the trading system can be extended to support multiple users at the same time. Using paid and more advance APIs instead of the basic APIs, we can easily extend the support of this application to numerous users.

Deploying the Model on Cloud

The predictive model can be trained and deployed on a cloud platform. Deploying the model on cloud does not remove the geographical barrier for our trading system but it will also increase the computation power and hence can give faster and more accurate results.

Mobile App for Trading System

At present, this trading system is compatible only with desktop versions of *Windows* and *Mac* operating system. But in the next update we can integrate our API and Application in the mobile versions with some modifications in the basic structure and User Interface, a mobile app can be developed for *Android* and *IOS* mobile users.

11. List of Publications

References

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Thank You

Questions