

BIT COIN PRICE PREDICTION USING MACHINE LEARNING ALGORITHMS

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Abstract: Bitcoin is nowadays the trending cryptocurrency available in the market. With the prices of bitcoin soaring from time to time, so is its volatile nature in the pricing. Prediction of bitcoin pricing is rather comprehensive, subject to the market liabilities and the vulnerable market scenario. It would have an extensive outreach, if we would rather able to predict the pricing scenarios of bitcoin from time to time. This paper proposes to implement Machine Learning algorithms to predict the bitcoin pricing stages. Deployment of the trending ML Algorithms and prediction of pricing is the extensive task and has been considered upfront taking into considerations of fluctuations, models and predictive analysis using datasets.

Keywords – Bitcoin, Machine Learning, Prediction, ML Algorithms, Python

I. INTRODUCTION

Cryptocurrencies are a need of the time. Ease of use, secured data transmission, void of theft and usage in almost all countries has made crypts gain advantage over the traditional currencies, deployed. Several other cryptocurrencies used are bitcoin, Ethereum, Litecoin, XRP, Tether and much more to mention. Each of the cryptocurrencies differ from the block chain models they deploy for the secured transaction and the sustainability and recognition in the market usage. Evidently Bitcoin makes upto 62% of the total cryptocurrency market that is in demand as per the financial year 2020.

Bitcoin makes up 62% of all cryptocurrencies
Total capitalization of traded virtual currencies

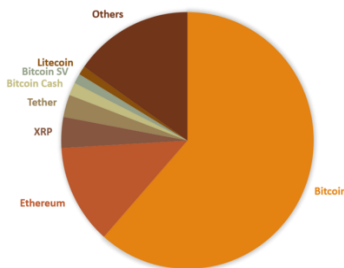


Figure 1. Cryptocurrency Market Share worldwide

Bitcoin is as of now the primarily used worldwide

cryptocurrency. Cryptographic money permits clients to securely and secretly utilize the Internet to perform advanced money moves and capacity. As of late, the Bitcoin network has pulled in financial backers, organizations, and enterprises while encouraging administrations and item bargains. In addition, Bitcoin has also made itself the predominant wellspring of decentralized cryptographic money.



Figure 2. Regionwise market of bitcoin (Volumes)

While impressive examination has been deployed concerning Bitcoin network investigation, restricted research has been led on foreseeing the Bitcoin pricing This paper implements to predict the pricing of the Bitcoin using supervised machine learning algorithms. In rounded (approximate) figures, the world-wide market price of bitcoin has soared from \$124 to \$34k in a span of 10 years. (Ref Figure 3. Chart display of Bitcoin market price)

It would be clear for investors, banking segments and other financial market capitalists incase if there is a predictive model to cater to the bitcoin pricing. Implementation of the same is done conceptually and illustratively in this paper. This paper implements the concept of applying Random Forest algorithm for analyzing

the time series pricing prediction of bitcoin to and illustrate the pricing analysis of bitcoin. Overcoming the flaws in the existing models of prediction analysis and determining the highest rate of accuracy in the pricing predictions are mandatory and is the need of the hour.



Figure 3. Chart display of Bitcoin market price

Thus a predictive strategy deploying latest machine learning or data algorithms in depicting the pricing variations taking into account the fluctuations of the market, considering the years of data would be recommendable.

II. EXISTING SYSTEM

Many research works have been done on pricing prediction of bitcoins in particular. But there are some restrictions on the same. Mostly previous researches use only the principal component analysis, ie only one sample data is taken into consideration for comparison and the same is maintained as reference filter value throughout the whole process of the prediction. Moreover, during the analysis process, only the yearly based segmentation techniques are deployed. This may have produced the desired results, but the accuracy prediction of the pricing prediction will not be the near to the same when the same is applied in real time scenarios. Mostly K Means Clustering is being used for the prediction purposes. There are many other algorithms available, hence it is necessary to make a detailed study by implementing the same and making comparisons on the level of accuracy prediction of the said implementation.

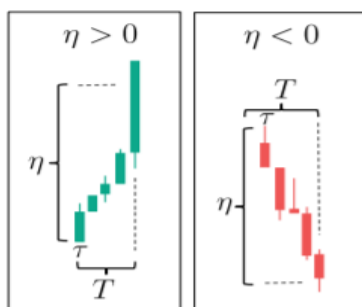


Figure 4. Existing Models Bitcoin price rise or fall over N

Some research works as been implemented in MATLAB. Statically the measures of this prediction system which is processed in terms of market, fluctuation, specifications, and accuracy needs to be designed and implemented in a much more sophisticated model so as to achieve the desired prediction accuracy levels.

Comprehensive analysis over a certain period of time only is possible in the existing systems. Exact price prediction is not available in any of the existing models. Rise or fall of the bitcoin price over a deviation is only predictable in the existing systems as in fig 3.

III. PROPOSED SYSTEM

In this paper we have come up with idea of using machine learning approaches, specifically Random Forest Algorithm for pricing prediction of Bitcoin currency. Machine learning algorithms are a perfect tool for analysis. First we have to gather dataset of past malicious apps as training set and with the help of Support vector machine algorithm and decision tree algorithm make up comparison with training dataset and trained dataset we can predict the malware android apps close a round 90% result.

A novel implementation scheme to collect the app dataset, process them using the DT and SVM Algorithm, prune the available data and classify them based on our prediction models are implemented in this paper. Improved percentage of accuracy in bitcoin price prediction, Implementation of ML Algorithms such as Random Forest and graphical results are the major advantages of the proposed system.

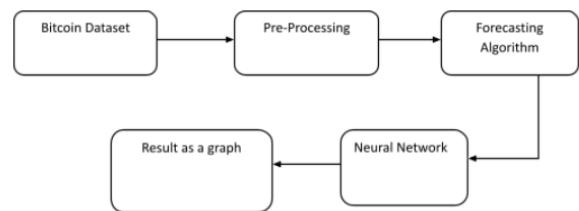


Figure 5. Process flow Diagram of the proposed method

A. DATA COLLECTION:

We have taken a sample data stream of upto 6.2lakh data from different worldwide markets, date and time. Data streams values may be numbers, such as real numbers or integers. Data is preprocessed using the desired algorithms and is being read as csv files and is executed on python idle.

The steps that are done are Preprocessing, Desired Feature Extraction for both the input image and dataset images so as to increase the accuracy level of prediction.

market	rpt_key	last	diff_24h	diff_per_2bid	ask	low	high	volume
bitstamp	btc_eur	1996.72	2029.99	-1.63892	2005.5	2005.56	1950	2063.73
bitstamp	btc_eur	1996.72	2029.99	-1.63892	2005.5	2005.56	1950	2063.73
bitflyer	btc_jpy	267098	269649	-0.94604	267124	267267	267124	267267
korbit	btc_krw	3003500	3140000	-4.34713	3003500	3004000	3002000	3209500
bitstamp	btc_usd	2237.4	2239.37	-0.08797	2233.09	2237.4	2154.28	2293.46
okcoin	btc_usd	2318.82	2228.7	4.043613	2319.4	2319.99	2129.78	2318.82
korbit	etc_krw	22740	23150	-1.77106	22700	22730	21000	25500
bitflyer	eth_btc	0.1034	0.08855	16.77019	0.10315	0.1034	0.10315	0.1034
korbit	eth_krw	311800	274500	13.58834	311800	311950	272500	336000
bitflyer	fx_btc_jpy	266600	275066	-3.07781	266276	266640	266276	266640
okcoin	ltc_usd	25.42	24.931	1.961414	25.364	25.42	23.2	25.514
korbit	etc_krw	22740	23010	-1.1734	22700	22730	21000	25500
korbit	etc_krw	311900	272500	14.45872	311900	311950	273000	336000
bitstamp	btc_eur	2005.56	2013.41	-0.38989	2005.56	2006.01	1950	2063.73
bitflyer	btc_jpy	268271	269440	-0.43386	268271	268300	268271	268300
korbit	btc_krw	3003500	3140000	-4.34713	3003500	3004000	3002000	3209500
bitstamp	btc_usd	2248.39	2242.44	0.265336	2247.77	2248.38	2154.28	2293.46
okcoin	btc_usd	2320.42	2228.4	4.12942	2320.99	2321.49	2129.78	2322
bitflyer	eth_btc	0.1034	0.08813	17.32668	0.10315	0.1034	0.10315	0.1034

Figure 6. Input samples Dataset

B. PREPROCESSING & EXTRACTION

Data preprocessing the initial step towards the Predictive data processing concepts. The datasets are preprocessed using the DWT Algorithm.

Feature Extraction expects to decrease the number of highlights in a dataset by making new features from the current ones. This is done by using the decision tree algorithm. This decision tree algorithm helps to utilize the coefficients of the data sets to blend a careful generation of the same to a numerical precision.

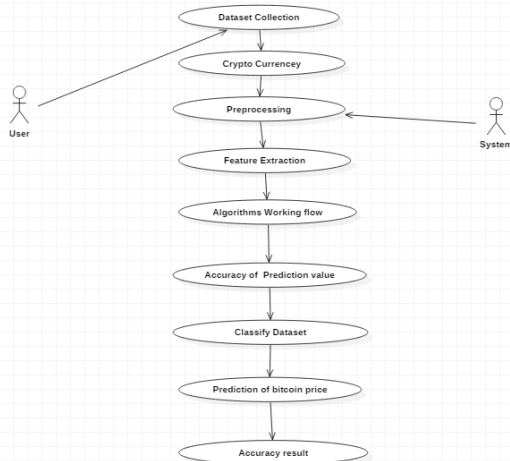


Figure7. Usecase Diagram of the Bitcoin Prediction

C. PREDICTION

Prediction flow is the process wherein the considered dataset is processed, suitable algorithms applied and prediction AL values determined. We deploy Random Forest algorithms for prediction. A Random Forest Algorithm is the updated version of the Decision tree , such as it forms a cluster of Randomised DT's whilst the data is processed for utmost accuracy and minimal loss.

D. ACCURACY ANALYSIS

The results obtained has been checked with the samples of real time data and the pricing predictions shows higher percentage of accuracy, in lieu with the real time data (Fig 8) in the prediction of the bitcoin prediction, which is very high comparatively to the existing systems available

The Results of the same are stored into the database for further detection and analysis purpose.



Figure 8. Realtime Vs Predictive Price of Bitcoin

IV. SOFTWARE SYSTEM

A. Python 2.5 / 3.5

Python is used in the implementation of the same as this is much user friendly and is excellent choice for these types of image processing tasks due to its growing popularity as a scientific programming language. This is an open Source platform and the free availability of many state-of-the-art data processing tools in its ecosystem make it apt for the use of data Preprocessing, extraction, Prediction and prediction analysis

B. Anaconda Navigator

Anaconda Navigator is the GUI that helps in visualizing the results in the form of graphics. Output predictions can be well visualized using the navigator.

V. RESULTS & CONCLUSION

This paper gives the prediction of bitcoin pricing to a precise accuracy level. More number of datasets make prediction algorithms more accurate. With very less computational efforts the optimum results were obtained, which also shows the efficiency of proposed algorithm in recognition and prediction of bitcoin prediction.

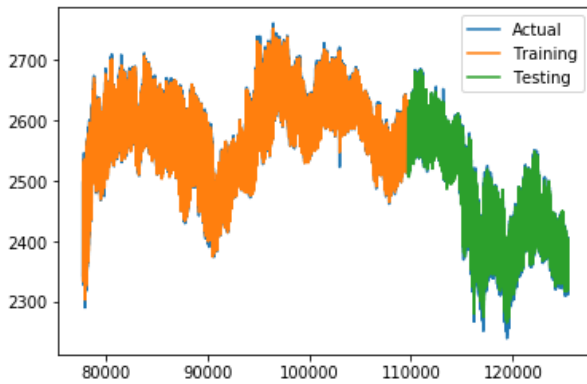


Figure 9. Bitcoin Pricing prediction results

VI. FUTURE SCOPE OF WORK

The accuracy level of the implemented project is very much satisfying, but real time scenarios can be worse. It is always better to make use of the latest algorithms and check the level of accuracy for each and every stage of the paper implementation. Artificial Neural Network, Fuzzy Logic and hybrid algorithms can also be deployed to check the same.

We can extend our work for various new algorithms for providing optimum results in context to existing techniques. Real-time application based plant disease categorization will be one of the main factors in the selection of the technique. Diagnosing tomato leaf disease is a sensitive and necessary task, so preciseness and reliability will also play a major role in the selection of the method. So any improvised method is always welcome.

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