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# A Survey on Bitcoin Predictor using Tensorflow and Keras

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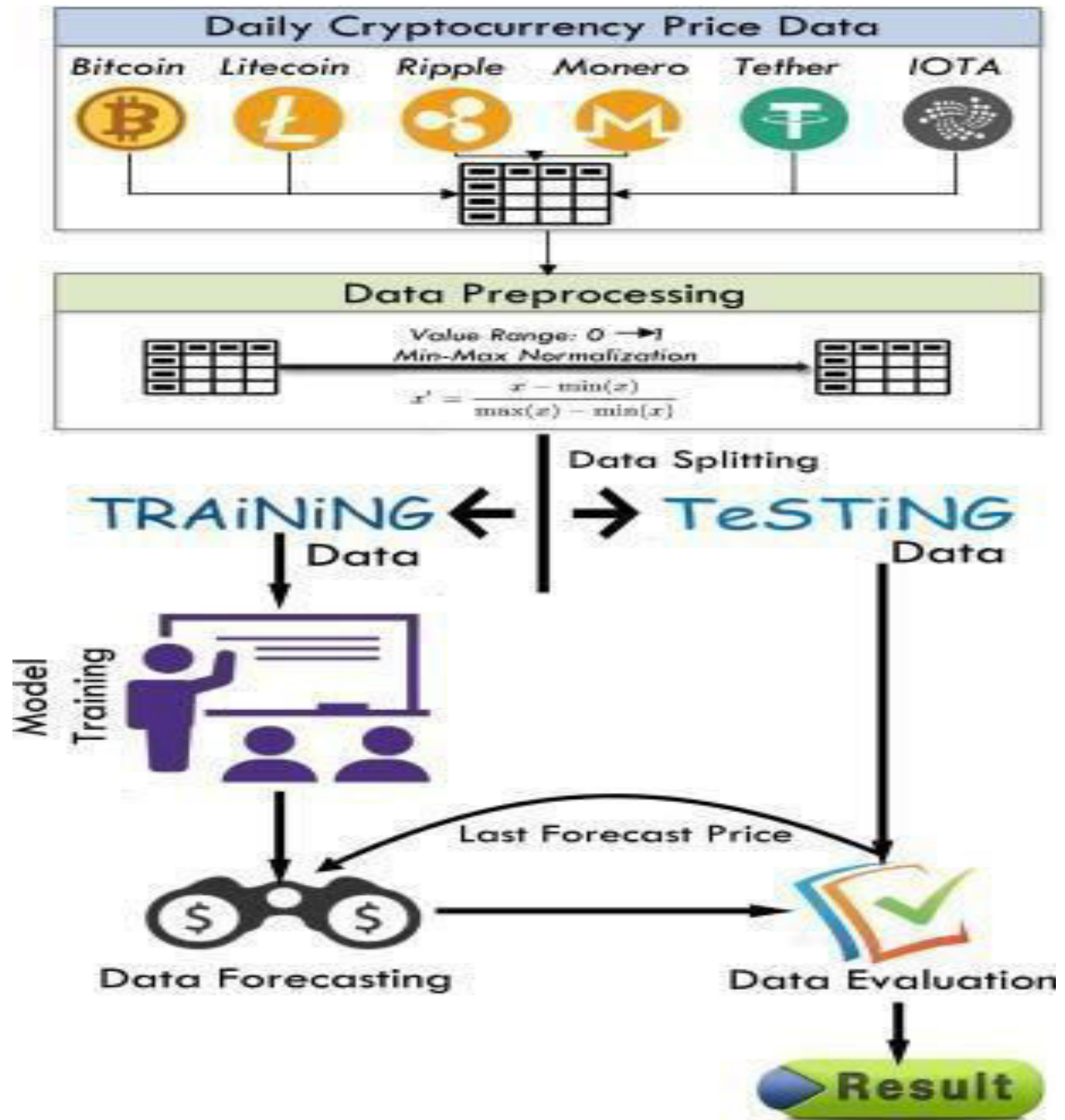
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**ABSTRACT:** The goal for this innovative undergrad project is to show how a trained machine model can predict the price of a cryptocurrency if we give the right amount of data and computational power. It displays a graph with the predicted values. The most popular technology is the kind of technological solution that could help mankind predict future events. With vast amounts of data being generated and recorded on a daily basis, we have finally come close to an era where predictions can be accurate and be generated based on concrete factual data. Furthermore, with the rise of the crypto digital era more heads have turned towards the digital market for investments. This gives us the opportunity to create a model capable of predicting crypto currencies primarily Bitcoin. This can be accomplished by using a series of machine learning techniques and methodologies.

**KEYWORDS:** Bitcoin, Block chain, BNN, LASSO algorithm.

## I. INTRODUCTION

Bitcoin is a cryptographic money which is utilized worldwide for advanced installment or basically for speculation purposes. Bitcoin is decentralized for example it isn't possessed by anybody. Exchanges made by Bitcoins are simple as they are not attached to any nation. Speculation should be possible through different commercial centers known as "bitcoin trades". These enable individuals to sell/purchase Bitcoins utilizing various monetary forms. The biggest Bitcoin trade is Mt Gox. Bitcoins are put away in an advanced wallet which is essentially similar to a virtual financial balance. The record of the considerable number of exchanges, the timestamp information is put away in a spot called Block chain. Each record in a block chain is known as a square. Each square contains a pointer to a past square of information. The information on block chain is scrambled. During exchanges the client's name isn't uncovered, however just their wallet ID is made open. The Bitcoin's worth fluctuates simply like a stock though in an unexpected way. There are various calculations utilized on financial exchange information for value forecast. Notwithstanding, the parameters influencing Bitcoin are extraordinary. In this manner it is important to anticipate the estimation of Bitcoin so right venture choices can be made. The cost of Bitcoin doesn't rely upon the business occasions or mediating government not at all like securities exchange. Hence, to anticipate the worth we feel it is important to use AI innovation to foresee the cost of Bitcoin.



## II. LITERATURE SURVEY

This section basically shows the various systems based on similar technologies which we used as inspiration for the development of our proposed system. These papers describing this are discussed here. The Table gives an overall summary of the referred systems and also gives a remark on their performance.





**A. Lekkala Sreekanth Reddy, Dr. P. Sriramya (April 2020)**

In this paper, we proposed to predict the Bitcoin price accurately taking into consideration various parameters that affect the Bitcoin value. By gathering information from different reference papers and applying in real time, I found the advantages and disadvantages of bitcoin price prediction. Each and every paper has its own set of methodologies of bitcoin price prediction. In this paper we conclude that survey report will be just introducing modules of Bitcoin price prediction and machine algorithms. Hear the Comparison table of ML algorithm model accuracy which tells that the Linear regression model will have most accuracy then the other algorithms. In this paper we conclude that the linear regression algorithm is more efficient then the other algorithms. By taking help from that linear regression algorithm, We can implement the LASSO also. The time complexity reduction in bit coin price prediction using LASSO algorithm is tested by referring all other algorithms and came to a conclusion that LASSO is the best among all. The machine learning algorithms will improves that feature idea of crypto currencies. That will improves the market price of globule investments. In this paper we proposed the new algorithm to find the feature

**B. Huisu Jang, Jaewook Lee (September 2017)**

In this study, we analyze the time series of Bitcoin price with a BNN using Blockchain information in addition to macroeconomic variables and address the recent highly volatile Bitcoin prices. Given the data of the entire time range, experimental results show that the BNN model learned with the selected features effectively describes processes of Bitcoin log price and log volatility. Adoption of rollover framework experimentally demonstrates the predictive performance of BNN is better than other benchmark methods on log price and volatility processes of Bitcoin. Through the empirical analysis, we have confirmed that the BNN model describes the fluctuation of Bitcoin up to August 2017, which is relatively recent. Unlike other benchmark models that fail directional prediction, the BNN model succeeded in relatively accurate direction prediction. From these experimental results, the BNN model is expected to have similar performance in more recent data. As the variation of Bitcoin process gets attention, it is expected that the expansion and application of the BNN model would be effective for the analysis and prediction of the Bitcoin process.

**C. S. Yogeshwaran, Maninder Jeet Kaur, Piyush Maheshwari (April 2019)**

Here in this project we have attempted to predict the prices of Bitcoins using two deep learning methodologies. This work focuses on the development of project based learning in the field of computer science engineering, by taking into account the problem definition, progression, student assessment and use of hands on activities based on use of deep learning algorithm to develop application which can predict bitcoin prices. Django was able to support the deep learning model and bring to life a graphical web app. The convolutional Neural Network though was primarily designed to study and classify images, was customized to predict a sequence of numbers. Though it fell short by having only 5% buffer amount, it was still able to compete with the LSTM model. Through this project, students were able to learn and understand the entire lifecycle of App development. They also gained experience in building machine learning modes and Web development using Django. Prediction models are going to get more complex and effective in the future due to the increase in data collection and development of stronger data analytic strategies. The only factor that might be holding us back is the need for more computational power.

**D. Devavrat Shah, Kang Zhang (October 2019)**

In this paper, we discuss the method of Bayesian regression and its efficacy for predicting price variation of Bitcoin, a recently popularized virtual, cryptographic currency. Bayesian regression refers to utilizing empirical data as proxy to perform Bayesian inference. We utilize Bayesian regression for the so-called "latent source model". The Bayesian regression for "latent source model" was introduced and discussed by Chen, Nikolov and Shah [1] and Bresler, Chen and Shah [2] for the purpose of binary classification. They established theoretical as well as empirical efficacy of the method for the setting of binary classification. In this paper, instead we utilize it for predicting real-valued quantity, the price of Bitcoin. Based on this price prediction method, we devise a simple strategy for trading Bitcoin. The strategy is able to nearly double the investment in less than 60 day period when run against real data trace.



**E. Zheshi Chen, Chunhong Li, Wenjun Sun (July 2020)**

In this study, we investigated machine learning techniques based upon sample characteristics of sample and dimension to predict Bitcoin price. While most previous works simply leverage machine learning algorithms in Bitcoin price prediction, we show that the sample’s granularity and feature dimensions should be considered. The Bitcoin aggregated daily price, acquired from CoinMarketCap, facilitates the inclusion of high-dimensional features, including property and network, trading and market, attention and gold spot price. The Bitcoin 5-minute interval trading price is facilitated by features from the Binance exchange. Based on the Occam’s razor principle and the paradigms applied in practical prediction problems using machine learning algorithms, we adopted statistical methods for Bitcoin daily price prediction and machine learning models for Bitcoin 5-minute interval price prediction. The results show that the statistical methods perform better for low-frequency data with high-dimensional features, while the machine learning models outperform statistical methods for high-frequency data. Most of our results also outperform the benchmark results of other machine learning algorithms. We envision that our approach to sampling dimension engineering using machine learning models for the prediction can be applied to other areas that have similar characteristics to Bitcoin.

**Table 1.** Summary of the referred systems

NO	TITLE	Authors	Methodology used	Accuracy	Year Published
1	A Research On Bitcoin Price Prediction Using Machine Learning Algorithm	Lekkala Sreekanth Reddy, Dr. P. Sriramya.	I)Least Absolute shrinkage selection operator(LASSO) II)Decision Tree III)kNN(k-Nearest Neighbors)	89%	2020



2	Modeling and Prediction Of Bitcoin Prices with Bayesian Neural Network	Huisu Jang, Jaewook Lee	Time Series Modelling	-	2017
3	Predicting Bitcoin Prices Using Deep Learning	S. Yogeshwaran, Maninder Jeet Kaur, Piyush Maheshwari	Convolutional Neural Network	74.5%	2015

4	Bayesian Regression And Bitcoin	Devavrat Shah, Kang Zhang	Choosing a reasonable parametric function space over which one tries to estimate parameters using observations	-	2014
5	Bitcoin Price Prediction using Machine Learning: An Approach to Sample Dimension Engineering	Zheshi Chen, Chunhong Li, Wenjun Sunt	Logistic regression, Linear discriminant analysis, Random forest, XGBoost, Quadratic discriminant analysis, Support Vector Machine	67.2%	2020

### III. METHODOLOGY

As described in the introduction, the key insight of our research is to adopt high-dimensional features and machine learning algorithms to predict the Bitcoin price. We separately select the proper feature sets for Bitcoin daily and high-frequency prices prediction via feature engineering.

We will get time series data (the historical price of Bitcoin) using pandas/Python's CSV module. After that, we will format data for a time series problem by doing the following step:

Creating training and test sets (the wrong way).

Creating training and test sets (the right way)

Visualizing time series data

Turning time series data into a supervised learning problem (windowing)

Preparing univariate and multivariate (more than one variable) data.

After that we will evaluate a time series forecasting model and set up a series of deep learning modeling experiments.

Dense (fully-connected) networks

Sequence models (LSTM and 1D CNN)

Ensembling (combines multiple models together).

Multivariate models

Replicating the N-BEATS algorithm using TensorFlow layer subclassing

We will be Creating a modelling checkpoint to save the best performing model during training.

After that we will be making predictions (forecasts) with a time series model and creating prediction intervals for time series model forecasts.

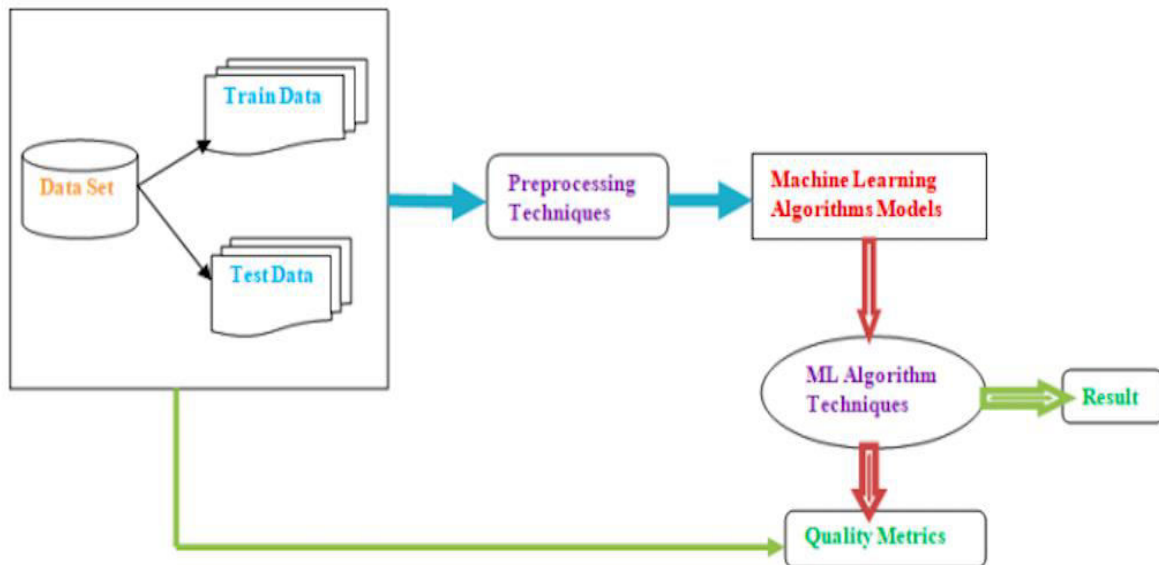


Figure 1. Architecture of the proposed system

The above illustration, Figure 1 shows the overall architecture of the system in a simplified way, with all the necessary checkpoints and phases.



#### IV. ISSUES IN THE PREVIOUS WORK

- 1) Faster recognition is low due to the huge amount of training data in the system.
- 2) The short-term predictability of the bitcoin market has not yet been analyzed comprehensively.
- 3) Furthermore, most studies have solely considered technical features and have not analyzed the feature importance of the employed machine learning models.

#### V. PLAN OF ACTION

Keeping in mind of the issues surveyed by comparatively analyzing through the papers studied in detail, we have chosen in our current work to overcome the following issues:

1. Currently, the system has reached the accuracy level up to 75% for the current training data. It can further be improved to obtain higher accuracy levels and faster recognition.
- 2) We are planning to make the system even more user friendly by making changes in the UI and make it easier to use.
- 3) We also plan to train more data, to make sure that the errors are at a minimum.
- 4) We are also planning to develop a detailed report so that it could be easier to understand.

#### VI. CONCLUSION

After analyzing various methods, this paper can achieve the goal of analyzing each method such as overall system capacity, throughput as well as accuracy. *Bitcoin Predictor Using Tensorflow and Keras* is designed to solve the issues of existing manual and monotonous systems. We have used crypto currency concepts to predict the price of bitcoin and make the existing system even better. Using time series data (historical price of bitcoin), we evaluate a time series forecasting model to make predictions for the bitcoin prices.

#### REFERENCES

- [1] ZHESHI CHEN, CHUNHONG LI, WENJUN SUN, BITCOIN PRICE PREDICTION USING MACHINE LEARNING: AN APPROACH TO SAMPLE DIMENSION ENGINEERING, 2020.
- [2] D. YERMACK, IS BITCOIN A REAL CURRENCY? AN ECONOMIC APPRAISAL, IN: HANDBOOK OF DIGITAL CURRENCY, ELSEVIER, 2015, PP. 31–43.
- [3] F. MAI, ET AL., HOW DOES SOCIAL MEDIA IMPACT BITCOIN VALUE? A TEST OF THE SILENT MAJORITY HYPOTHESIS, J. MANAGE. INF. SYST. 35 (1) (2018) 19–52.
- [4] I. MADAN, S. SALUJA, A. ZHAO, AUTOMATED BITCOIN TRADING VIA MACHINE LEARNING ALGORITHMS, VOL. 20. URL: [HTTP://CS229.STANFORD.EDU/PROJ2014/ISAAC%20MADAN](http://CS229.STANFORD.EDU/PROJ2014/ISAAC%20MADAN), 2015.
- [5] DEVAVRAT SHAH, KANG ZHANG, BAYESIAN REGRESSION AND BITCOIN, 2014.
- [6] G. BRESLER, G. H. CHEN, AND D. SHAH, “A LATENT SOURCE MODEL FOR ONLINE COLLABORATIVE FILTERING,” IN *ADVANCES IN NEURAL INFORMATION PROCESSING SYSTEMS*, 2014.
- [7] L. WASSERMAN, *ALL OF NONPARAMETRIC STATISTICS*. SPRINGER, 2006.
- [8] R. TIBSHIRANI, “REGRESSION SHRINKAGE AND SELECTION VIA THE LASSO,” *JOURNAL OF THE ROYAL STATISTICAL SOCIETY. SERIES B (METHODOLOGICAL)*, PP. 267–288, 1996.
- [9] LEKKALA SREEKANTH REDDY, DR.P. SRIRAMYA, A RESEARCH ON BITCOIN PRICE PREDICTION USING MACHINE LEARNING ALGORITHMS, 2020
- [10] —PREDICTING THE PRICE OF BITCOIN USING MACHINE LEARNING | SEAN MCNALLY ; JASON ROCHE ; SIMON CATON; IRELAND, DUBLIN, IEEE 2018
- [11] —BITCOIN VOLATILITY FORECASTING WITH A GLIMPSE INTO BUY AND SELL ORDERS | TIAN GUO ; ALBERT BIFET ; NINO ANTULOV- FANTULIN ; IEEE 2018
- [12] F. ANDRADE DE OLIVEIRA, L. ENRIQUE ZÁRATE AND M. DE AZEVEDO REIS; C. NERINOBRE, —THE USE OF ARTIFICIAL NEURAL NETWORKS IN THE ANALYSIS AND PREDICTION OF STOCK





PRICES, IN IEEE INTERNATIONAL CONFERENCE ON SYSTEMS, MAN, AND CYBERNETICS, 2011, PP. 2151-2155.

[13] HUISU JANG AND JAEWOOK LEE, AN EMPIRICAL STUDY ON MODELING AND PREDICTION OF BITCOIN PRICES WITH BAYESIAN NEURAL NETWORKS BASED ON BLOCKCHAIN INFORMATION, 2017

[14] A. H. DYHRBERG, "BITCOIN, GOLD AND THE DOLLAR—A GARCH VOLATILITY ANALYSIS," *FINANCE RESEARCH LETTERS*, VOL. 16, PP. 85–92, 2016.

[15] P. KATSIAMPA, "VOLATILITY ESTIMATION FOR BITCOIN: A COMPARISON OF GARCH MODELS," *ECONOMICS LETTERS*, VOL. 158, PP. 3–6, 2017.

[16] A. F. BARIVIERA, M. J. BASGALL, W. HASPERUÉ, AND M. NAYOUF, "SOME STYLIZED FACTS OF THE BITCOIN MARKET," *PHYSICA A: STATISTICAL MECHANICS AND ITS APPLICATIONS*, VOL. 484, PP. 82–90, 2017.

[17] S. YOGESHWARAN, MANINDER JEET KAUR, PIYUSH MAHESHWARI, PROJECT BASED LEARNING: PREDICTING BITCOIN PRICES USING DEEP LEARNING, 201

[18] A. H. DYHRBERG, "BITCOIN, GOLD AND THE DOLLAR—A GARCH VOLATILITY ANALYSIS," *FINANCE RES. LETT.*, VOL. 16, PP. 85–92, FEB. 2016.

[19] P. KATSIAMPA, "VOLATILITY ESTIMATION FOR BITCOIN: A COMPARISON OF GARCH MODELS," *ECON. LETT.*, VOL. 158, PP. 3–6, SEP. 2017.

[20] A. F. BARIVIERA, M. J. BASGALL, AND W. HASPERUÉ, AND M. NAYOUF, "SOME STYLIZED FACTS OF THE BITCOIN MARKET," *PHYS. A, STAT. MECH. APPL.*, VOL. 484, PP. 82–90, OCT. 2017.



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