



BITCOIN PRICE PREDICTION

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ABSTRACT

Introducing Our Prediction for Bitcoin Prices Utilizing machine learning (ML), a machine learning model that is applied with specific algorithms to infer the price of bitcoin given further information about the variables influencing the direction of the price. Because Indian law enforcement is allowing tax deductions for earnings made from bitcoin investments and returns, bitcoin's popularity has just peaked again. Bitcoin is a payment method and digital asset that is used as virtual money on the Internet. Due to its ability to facilitate anonymous payments between individuals, it is a favored payment method for illicit activities conducted online. Because of its recent price increase, Bitcoin has drawn a lot of interest from the public and media. This research aims to ascertain the Bitcoin price's predictable price direction. We should be able to gain the knowledge we need to understand cryptocurrency's future via machine learning models. Although it can't predict the future, it can indicate the overall trend and direction in which prices are likely to move. The suggested approach aims to create a machine learning model in which the dataset's patterns are discovered through data analysis, and the machine learning algorithm is then utilized to forecast the price of bitcoin based on the biases that have a direct impact on it. We were able to approach the improved version of the bitcoin price prediction model thanks to the insightful comments from the domain experts.

INTRODUCTION

This project deals with the bitcoin price, which fluctuates on a daily basis. Bitcoin, if we need to explain about it in a simple manner, we can consider it as a computer file that is basically stored in a digital wallet application or in the computer. We can send a bitcoin as a whole or a part of it to other people, which gets recorded in a public transaction list that is referred to by the term 'blockchain'. The domain our project belongs to is Machine Learning which is a type of Artificial Intelligence that is a part of data

science. Data science can be considered a field of study and development that revolves around information and data. Artificial Intelligence (AI) can be considered a part of data science and Machine Learning (ML), comes under AI. Data science deals with processing and analyzing data with a motive for producing useful stuff that can be used in many ways out of the data. Artificial Intelligence can be considered as a part of Data Science, that deals with stimulating the machine, i.e. computer, with human knowledge. This helps the machines/ computers to behave in a very human-like manner. It is implemented using many ways of learning like deep learning, machine learning, etc. Here we have used machine learning. A. Machine Learning Machine Learning is more about prediction kind rather than the learn and behave kind. What machine learning does is, it makes the system take a good deal of past data and by using various algorithms and techniques it can make predictions corresponding to the data, and it learns how to do it automatically by itself from those algorithms. Simple example of ML is that we can take all of the cat family member's pictures and boost our ML model with algorithms and the names of the members which will be human fed. We train the model with the past images collected, and test it on new images, we can see that the machine has learned to identify the newer images as cats or not. We people use ML in our daily lives, if we are able to use Google photos the well-known photo gallery application from Google LLC gathers photos of us and it asks us questions along with our various images, like "Is this the same person?", if we feed data on a regular basis for a week, we can see that almost 99% of our data is being classified and organized neatly, for each and every person in the pictures in our gallery. Nowadays, ML is one of the fields that is soaring in the IT sector, as we can see so many automated services and devices in many other sectors too. Machine Learning is a part of Artificial Intelligence (AI), where the production of next generation humanoid- robots. These robots can be used in various fields from military to medicine. There are even robots that are being made to perform operations and other medical treatments. From all the research and developments that are taking place in a rapid manner, we can clearly see that our future has an irreplaceable place for machine learning and artificial intelligence.

RELATED WORK

Yang Li, Zibin Zheng and Hong-Ning Dai (2019)

uses three types of features—basic features, conventional technical trading indicators, as well as features produced by a Denoising autoencoder—to investigate the value of Bitcoin fluctuation prediction problem, which is defined as whether the price of Bitcoin maintains or reverses after a significant fluctuation. An Attentive LSTM network and an Embedding Network (ALEN) are used to evaluate these properties. also looks into how parameters affect the Bitcoin price fluctuation forecast problem, which investors may apply in a live trading environment.

Rekala Sreekanth Reddy, Rd. P. Sriramya (2020)

Currently, a lot of publications have accurate pricing, but others don't. The time complexity of those forecasts is higher, thus in this study, the authors employed an artificial intelligence-related approach called LASSO (least absolute shrinkage selection operator) to lower the time complexity.

Shivam Pandey, Mr. Anil Chavan

This paper's initial section attempts to obtain insight into the ideal characteristics surrounding Bitcoin price while also comprehending and identifying everyday trends in the market. Using the data at hand, the second part of our survey focuses on predicting the daily price change's sign. In this experiment, they have used two deep learning approaches in an attempt to anticipate Bitcoin prices.

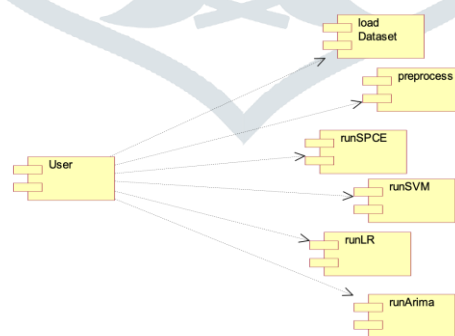
Muhammad Ali Nasir¹, Toan Luu Duc Huynh (2021)

This quick study examines the prediction of Bitcoin volume or returns utilising Google search rankings in light of the ongoing discussion about cryptocurrencies' place in the economy, as well as its dynamics and forecasting.

METHODOLOGY

[1]. Load Bitcoin Data from Blockchain:

This step involves accessing historical Bitcoin data from the blockchain. You can utilize APIs provided by blockchain explorers like Blockchain.com, Blockchain, or CoinGecko to fetch data. An example image could be a screenshot of a Python script using an API to retrieve Bitcoin price data from the blockchain.



[2]. Preprocess Dataset:

Data preprocessing is essential to ensure data quality and suitability for analysis. This step may include handling missing values, removing duplicates, scaling features, and encoding categorical variables if applicable.

An image might show a flowchart depicting various preprocessing steps like data cleaning, normalization, and feature engineering.

[3]. Run Subspace Learning SPCE Algorithm:

Subspace learning algorithms like SPCE aim to reduce the dimensionality of data while preserving its essential characteristics.

A data could illustrate a plot showing the reduction in dimensionality achieved by the SPCE algorithm, perhaps comparing the original feature space to the reduced subspace.

[4]. Run SVM Algorithm:

Support Vector Machine (SVM) is a supervised learning algorithm used for classification and regression tasks. In the context of Bitcoin analysis, it might be used for price trend prediction or anomaly detection.

An image might depict a decision boundary created by SVM to classify Bitcoin price movements into different categories, such as 'bullish' and 'bearish'.

[5]. Run Logistic Regression Algorithm:

Logistic Regression is a statistical method for binary classification. In Bitcoin analysis, it could be used to predict the likelihood of price movements or market trends.

An image will show a graph representing the predicted probabilities of Bitcoin price increases or decreases based on historical data, derived from a logistic regression model.

[6]. Run ARIMA Algorithm:

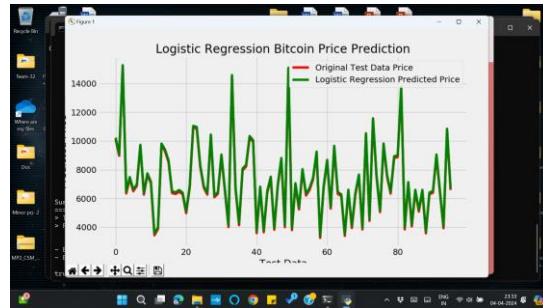
Autoregressive Integrated Moving Average (ARIMA) is a time series forecasting method. In Bitcoin analysis, ARIMA could be employed to predict future price movements based on historical price data.

An image could display a time series plot showing the actual Bitcoin prices overlaid with the predicted prices generated by an ARIMA model.

RESULT AND DISCUSSION



In above screen click on 'Load Bitcoin Data from Blockchain' button to load data from Blockchain and get below output.



In above Logistic Regression graph, red color is the original test data price and the other color green considered as the prediction price which is used by Logistic Regression model.

In the similar way, we will have SVM algorithm which also have red and green color which indicates original and prediction price of the bitcoin simultaneously, but here we use SVM algorithm.



In above ARIMA graph light blue line is the training prices and dark blue line is the test data and yellow line is the predicted data and both test and predicted data is shadowed so we can say ARIMA prediction is also accurate

In this project we have evaluated the performance of SVM, Logistic Regression and ARIMA and in all algorithm Logistic Regression and ARIMA is giving better prediction prices.

CONCLUSION

Application of machine learning and data analysis techniques, Researchers have explored various methodologies to forecast the volatile nature of Bitcoin prices, leveraging historical data, technical indicators, sentiment analysis, and external factors to build predictive models.

Studies have demonstrated the effectiveness of machine learning algorithms such as LSTM, regression models, and ensemble methods in predicting Bitcoin price movements.

In the project, data cleaning and missing value processing are the first steps in the analytical process. Exploratory analysis comes next, followed by model construction and evaluation. It will determine which

public test set has the best accuracy with the highest accuracy score. Finding the price of bitcoin on the market might be aided by this programme. By optimising it for an artificial intelligence context, the model can be further connected to AI. It can also be automated by developing a desktop or web application. Though it is connected to artificial intelligence, the idea we have for its improvement is of a different nature.

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