BITCOIN PRICE FLUCTUATION ANALYSIS AND PREDICTION USING MACHINE LEARNING

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ABSTRACT

Bitcoin is a digital asset and payment system used as a form of currency on the Internet. It is the preferred way to pay for online criminal activity as it allows one person to anonymously pay another person. Recently, Bitcoin has received a lot of media and public attention due to its recent price increase. This journal is too predictable the direction of Bitcoin price. Machine learning models will probably give us a glimpse into the future of crypto-currencies. It does not tell us the future, but it can show general trends and the direction in which prices are expected to move. The aim is to build a machine learning model that uses data to learn patterns in a dataset and predicts the price of Bitcoin using various machine learning algorithms by comparative method.

Keywords: Bitcoin prediction, linear-regression, random forest, Adaboost regressor, gradient boosting, ridge, lasso, decision tree, machine learning.

1. INTRODUCTION

Bitcoin is a digital pseudo-currency and payment system based on a trusted public crypto currency. It challenges many notions of traditional banking as well as government regulated currencies and transactions. Bitcoin allows people to bypass traditional centrally controlled payment systems. Bitcoin is legal to use virtually everywhere and several countries have officially accepted it as 'private money'. Millions of people have directly transferred Bitcoin virtual money through its peer-to-peer network while building a large open data source called the Bitcoin blockchain: transactions bundled in blocks that form a chain. Bitcoin, and in particular users' transaction activities, are an important data source to study because little is known about how Bitcoin compares to fiat currencies. Understanding behavior around the currency can help to explain certain Bitcoin phenomena such as its large volatility. In addition, a high level of technical expertise is required to extract, store, and analyse Bitcoin transactions that domain experts who are interested in Bitcoin usually do not have. There are several approaches that lower the Bitcoin analysis threshold and allow for in-depth analysis. Bitcoin is a digital asset and payment system used as a form of Internet currency. It is the preferred way to pay for online criminal activity as it allows one person to anonymously pay another person. Recently, Bitcoin has received a lot of media and public attention due to its recent price increase. We are investigating the Bitcoin price movement prediction problem, which can be described as holding or reversing the price of Bitcoin after large fluctuations. The objective of this project is to determine the predictable price direction of Bitcoin price. Machine learning models can likely give us the insight we need to learn about the future of Cryptocurrency. It will not tell us the future but it might tell us the general trend and direction to expect the prices to move. The proposed model is to build a machine learning model where we compare the six modules: Gradient boosting, Linear Regression, Decision Tree Regression, Random Forest Regression, Support Vector Regression, Lasso Regression to predict the accuracy and comparing with the metrices of: Mean Square Error, Root Mean Squared Error (R 2 Error), Mean Absolute Error, Score Function (Explained Variance), Median Absolute Error. The best accuracy will be found out. And we will create an interface. This app can help you find the BITCOIN market price.

2. LITERATURE REVIEW

An Attentive LSTM network and an Embedding Network are used to provide features (ALEN). An alert LSTM network can capture the time-dependent representation of the Bitcoin price, and an embedding network, the hidden representations from related cryptocurrencies. According to experimental findings, ALEN outperforms all baselines in terms of current performance. The impact of factors on the problem of predicting the fluctuation in the price of bitcoin is also examined because it can be applied by investors in actual trading situations. To anticipate the Bitcoin price accurately taking into consideration many aspects that affect the Bitcoin value. I discovered the benefits and drawbacks of bitcoin price prediction by gathering information from several reference papers and using it in real time. Each study has its own set of methodology for predicting bitcoin prices. Several articles have accurate prices, while

some do not, but the time complexity in those forecasts is larger, thus in this study we utilise an algorithm related to artificial intelligence called LASSO (least absolute shrinkage selection operator) to lower the time complexity. Other articles utilised algorithms such as SVM (support vector machine), coin mark upcap, Quandl, GLM, CNN (Convolutional Neural Networks), and RNN (Recurrent Neural Networks), among others, that do not have good time management, but in LASSO finding. Two deep learning approaches were used to attempt to predict Bitcoin prices. This work focuses on the creation of project-based learning in the field of computer science engineering by considering issue definition, progression, student assessment, and the use of hands-on activities based on the use of learning algorithms to construct applications. The brief study examines the predictability of Bitcoin volume and returns using Google search values in the context of the debate over the role of cryptocurrencies in the economy, as well as their dynamics and forecasting. To capture a dependence structure, we used a wide range of established empirical approaches, including a VAR framework, a copulas approach, and non-parametric drawings. Using a weekly dataset from 2013 to 2017, our key findings indicate that the frequency of Google searches leads to positive returns and an increase in Bitcoin trading volume. Shocks to search values had a positive effect that lasted at least a week. Our findings contribute to the debate on cryptocurrencies/Bitcoins and have significant implications for understanding their dynamics, which are of interest. Researchers incorporate economic indications like volume and price of exchange for USD, Bitcoin adoption, and Bitcoin transaction volume. For more than three years, we have included social signals relating to information search, word of mouth volume, emotional valence, and opinion polarization as represented in Bitcoin-related tweets. According to with us findings, rising Bitcoin prices are preceded by rises in opinion polarization and trade volume, and growing Bitcoin prices are preceded by increases in emotional valence. Researchers use these insights to create algorithmic trading methods for Bitcoin, and we have made a lot of money in less than a year. Researchers demonstrate the long-held premise that trading-based social media sentiment has the highest profitability by using strong statistical approaches that account for risk and trading expenses.

3. EXISTING SYSTEM

Bitcoin is a digital asset and payment system used as a form of online money. It is the preferred way to pay for online criminal activity as it allows one person to anonymously pay another person. Recently, Bitcoin has received a lot of media and public attention due to its recent price increase. The purpose of this article is to determine the predictable direction of Bitcoin price. Machine learning models will probably give us a glimpse into the future of cryptocurrencies. It does not tell us the future, but it can show general trends and the direction in which prices are expected to move. The proposed model aims to build a machine learning model that uses data to learn patterns in a dataset and predicts the price of Bitcoin using machine learning algorithms.

4. PROPOSED SYSTEM

Bitcoin system has received a lot of media and public attention due to the recent price increase. The main aim is to determine the direction of Bitcoin price. Given supervised machine learning (SMLT) dataset analysis to gather multiple details such as variable identification, univariate analysis, bivariate and multivariate analysis, missing value handling and data validation analysis, data cleaning/preparation and data visualization. This is done for all data sets. Our analysis provides a comprehensive guide to the analysis of the sensitivity of model parameters with respect to predictive performance. Proposed based on machine learning, compare, and discuss the performance of various machine learning algorithms for a given dataset.
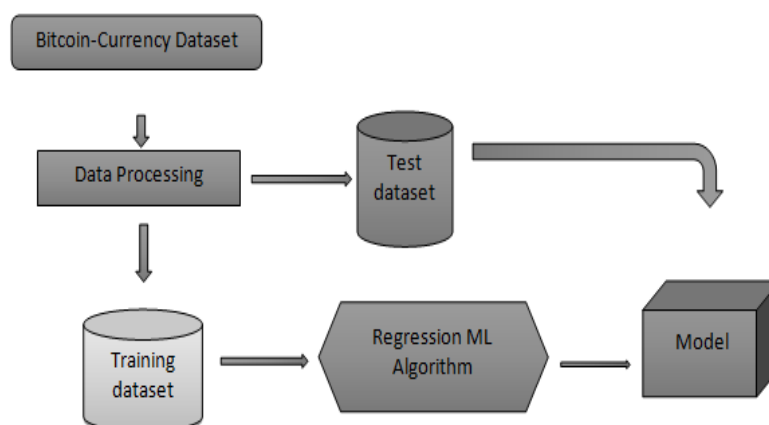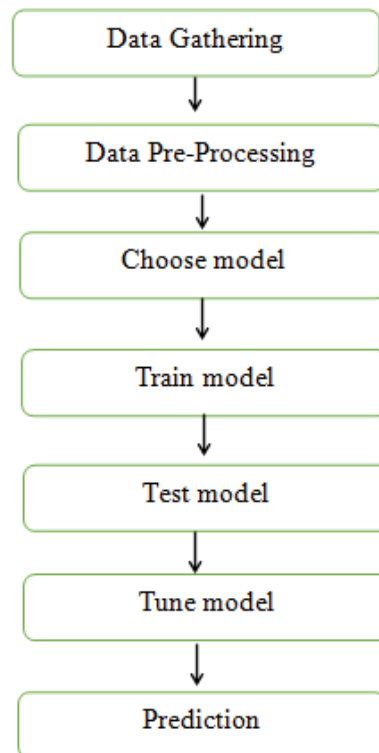

Fig. 1: Architecture of ML model

Fig. 2: Data flow diagram

5. MODULES

5.1 Data pre-processing

The data preprocessing machine learning validation method is used to obtain the error rate of a machine learning (ML) model, which can be considered close to the true error rate of the data set. A variety of data cleaning operations using the Python Pandas library, especially the largest data cleaning operations, focusing on missing values, can help you clean data faster. He wants to spend less time cleaning data and more time exploring and modelling.

5.2 Visualization studies data analysis

Data visualization is an essential skill in applied statistics and machine learning. Statistics really focuses on the quantitative description and evaluation of data. Data visualization provides an important set of tools for qualitative understanding. This can be helpful when exploring and getting to know a dataset and can help with identifying patterns, corrupt data, outliers, and much more. Sometimes data does not make sense until it can look at in a visual form, such as with charts and plots. Being able to quickly visualize of data samples and others is an important skill both in applied statistics and in applied machine learning. It will discover the many types of plots that you will need to know when visualizing data in Python and how to use them to better understand your own data.

5.3 Comparing Algorithm with prediction in the form of best accuracy

It is important to compare the performance of multiple different machine learning algorithms consistently and it will discover to create a test harness to compare multiple different machine learning algorithms in Python with scikit-learn. You can use this test set as a template for your own machine learning problems and add other algorithms for comparison. Different models have different performance characteristics. Resampling techniques such as cross-validation allow you to estimate how accurate each model is on unseen data. In order to choose one or two for improvement, several different methods must be used to evaluate the expected accuracy of machine learning algorithms. We are using the following algorithms: Linear Regression, Gradient Boosting Regressor, Random Forest, Decision Tree, Adaboost Regressor, Ridge, Lasso. One way to do this is to use various visualization techniques to display the mean precision, variance, and other properties of the model precision distribution.

Metrics for Regression Model:

- Root Mean Square Error
- Root Mean Square Error (R2 Error)
- Mean Absolute Error
- 4.Estimation Function (Explained Variance)

•Mean Absolute Error

5.4 Deployment

5.4.1 Flask Distribution (Web Framework)

Flask is a microweb framework written in Python. It is classified as a microframework because it does not require any special tools or libraries. No database abstraction layer, form validation, or other components that existing third-party libraries provide common functionality. However, Flask supports extensions that can add application functionality as if implemented in Flask itself.

6. RESULTS

Here in this paper, we have attempted to predict the prices of bitcoin using different machine learning algorithms. The analytical process started from data cleaning and processing, missing value, exploratory analysis and finally model building and evaluation. The best accuracy on public test set is higher accuracy score is will be found out. This application can help to find the BITCOIN Market Price.

Fig. 3: Application for bitcoin prediction using flask

Table 1. Accuracy comparison of different Machine algorithms

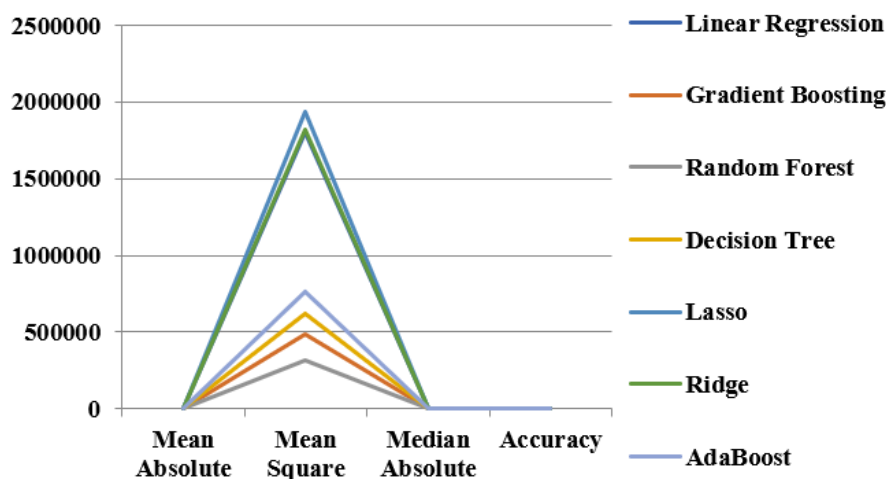| Algorithm	Linear	Gradient Boosting	Random Forest	Decision Tree	Lasso	Ridge	AdaBoost
Accuracy	86%	97%	98%	96%	87%	88%	94%

Fig. 5: Graphical format of accuracy

7. CONCLUSION AND FUTURE WORK

Data cleaning and processing were the first steps in the analytical process, followed by missing value discovery, exploratory analysis, and lastly model construction and assessment. The highest accuracy score is determined by the best accuracy on the public test set. This application will assist you in determining the BITCOIN market price. Prediction of Bitcoin market price for use with AI algorithms. Display the outcomes of your forecast in a desktop or online application to automate this procedure. Implement in an artificial intelligence setting to maximise your task.

8. REFERENCES

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