

Bitcoin Price Prediction for Long, Short and Medium Time Frame

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Abstract - Over the past decade the world has seen a gradual shift in the use of digital methods than the actual methods used in the past. The key to this economic change is the collection of digital crypto-currency. Among this group of crypto-currencies, the most widely used in today's market is Bitcoin. Bitcoin is a blockchain-based digital asset that is not under the control of any central authority and uses peer to peer financial performance. Due to the nature of crypto-currencies, excessive flexibility is seen in that way it encapsulates the need to study basic value models and exhibits unstable behaviors as the statistical distribution of data changes over time. To address these issues, we use classification based on machine learning and retraction models. Although the machine learning-based classification models used to date have only been able to study for one day, this paper focuses on the need to use a highly efficient machine learning model based on differentiation and retrieval that can be read over a period of time. for one day, one week, 30 days and 90 days of time. This paper focuses not only on the use of a highly efficient machine learning model but also on the use of a possible model, which is able to produce the correct accuracy over a specified period of time.

Key Words: Time Series Forecasting, Blockchain, Machine learning, Deep Learning, Regression, Classification.

1. INTRODUCTION

Economics and financial systems around the world are changing to digital at an unprecedented rate, as it is believed that digital economic integration is one of the major disruptions in the global financial system. It is estimated that by 2025 the size of digital assets comprising both tangible and intangible assets should include 25% of the total value of 23 trillion USD. Blockchain also appears to have found its place among similarities between Fintech and next-generation networks due to advances in Distributed ledger (DLT) technology, which is directly responsible for the creation and use of digital assets.

Intangible property is an asset that lacks any tangible object; therefore crypto-currencies are considered intangible. It is an issue with crypto-currency due to its fragmentary nature of extreme price fluctuations. Figure 1 shows the worst case scenario for BTC prices during the period April 1, 2013 to December 31, 2019. Figure 1 shows a 1900% increase in BTC prices for 2017, only followed by 72. % decline in its value in 2018. As a digital asset Bitcoin is considered a strong indicator, although it shows extreme volatility in its values. It is also believed that BTC can quickly recover its value even if the market is in a state of uncertainty.

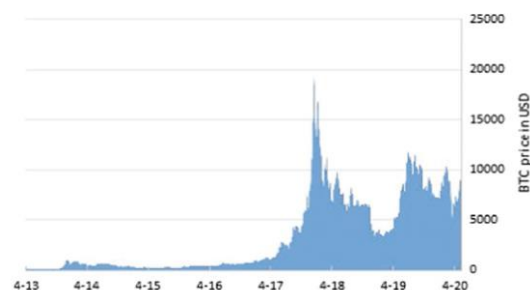


Fig:1: BTC prices during the time period of April 1,2013 to December 31, 2019L

Various studies have been presented in an effort to predict BTC prices. [2] One such study attempts to predict daily price changes by identifying different parameters and daily trends in order to gain insight into specific relevant factors. This study uses MATLAB's neural network toolbox to build and evaluate network performance Takes normal log values as input

to determine its effect. While many studies use standard log values as visual inputs that provide a performance performance that is much lower than actual values while providing more errors thus misleading.

One such study [4] in which a continuous Bayesian neural network (RNN) and Long-Term Memory (LSTM) is used to determine what level of accuracy can be found in BTC price predictions. This paper follows CRSP data mining technology over the normal KDD while using the database from August 19,2013 to July 19,2016, LSTM found an error of 8.07% while RNN found error of 7.15% while the neural network gained 50.25% accuracy

As we all know because of the covid-19 crisis the world economy was facing Another study [7] examines the relationship between bitcoin features and how these factors affect price volatility the next day using the Artificial Neural Network (ANN) to integrate a method called Genetic Algorithm based Selective Neural Network. This study appears to use a feature set that contains approximately 200 components over a period of 2 years. The accuracy of this particular model ranges from 58% to 63%

In addition to studies conducted based on Machine learning models, it was also noted that crypto-currencies or Bitcoin in general, is deeply connected to social media, where one group studied the period from September 4, 2014 to August 31,2018 trying to capture. Number of times the word "Bitcoin" was tweeted and concluded that the trading volume the next day was directly influenced by the number of Tweets on Twitter. A separate team also studied how user comments on online platforms affected price fluctuations and the amount of transactions, concluding that price fluctuations and the number of transactions are associated with a number of positive comments received by Bitcoin on the online platform.

2. Literature Survey

With the rapid digital development of every part of our current world knowing how digitalization has affected global finance is an interesting topic and how the tensions created by all currencies led to the creation of all new currencies known as Crypto-currency in particular. Bitcoin has captured the attention of the researcher. As we all know because of the covid-19 disaster the world economy was facing a major crisis. As everything goes online, people are investing heavily in crypto-currencies. We believe that in this epidemic people need to be aware of the market they are investing in, whether it will benefit them or not in the future. Also, as we know crypto-currencies (bitcoin) are volatile, fragmented and non-existent. Its value does not depend on the government or the incoming business event. Predicting the BTC process has been a major concern for many researchers. But before that we need to know what kind of people directly use bitcoins or any target audience when BTC prices are most affected. Recalling this [1] he conducted a survey in which he asked three research questions. What predicts wealth collection among Bitcoin users? What predicts hope for the near and long-term value of Bitcoin? They used the results of a Bitcoin users survey to educate the bitcoin community based on demographics, behavior and political standing.

In the early days when Bitcoin was gaining momentum most of the Bitcoin community included wasting bitcoin on illegal assets due to the anonymity offered by BTC to its users. Age and residency in the U.S. also define the type of users. Age has an indirect relationship that predicts hope for Bitcoin over time, with younger and older users having less hope than users in their 30s. While the US move had an impact on the Bitcoin community in earlier days because most people who used bitcoin in those days often lived in US Investors and Business persons saw Bitcoin as another type of currency that could free a person from government power, left-Of. -install users are particularly attracted to Bitcoin as a payment system divided into power structures within the financial sector.

Bitcoin is the future, and it has improved in this epidemic situation. People are now investing heavily in bitcoins, instead of gold and stock markets. Therefore, effective planning is very important. This may be the main reason for much research in this field. A number of algorithms are available to predict stock market prices but there are only a few bitcoin pricing predictions. Also, the factors that affect Bitcoin are different then the stock market. In addition, the algorithms available to predict bitcoin prices, can only predict prices at the end of the day and the day following the increase / decrease in price. With the development of technologies such as AI / ML etc. Most researchers are using these new methods to predict bitcoin prices.

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Despite its rapidly changing nature, bitcoin pricing estimates are of interest to researchers. A number of studies and studies have been conducted to discuss whether BTC prices can be predicted using technical indicators and demonstrated the existence of significant returns forecasts. Some recent research has been done using various methods related to machine learning in the end-of-day price forecast and inflation / decline forecasts. However, the time frames for these studies were made taking into account BTC prices until April 1, 2017 and March 5, 2018. We believe that current research is needed considering the volume of BTC price movements that occur after these days. Also, most of the activity in this area focuses on predicting end-of-day price forecasts and increasing / decreasing next day price projections.

According to [2] the author is trying to predict Bitcoin values accurately considering the various parameters affecting Bitcoin value. They considered factors such as block size, Total bitcoins, maximum day, minimum day, transaction value, trading volume. They used different methods to get used to the BTC data collected such as standard deviation, z-score method, standard boxcox method. They then used the two-way Bayesi and GLM / random forest regression methods and aimed to use the best method from both to solve the Bitcoin price prediction problem. [3] attempts to explore Bitcoin features and the next day's change in Bitcoin value using an Artificial Neural network integration method called the Genetic Algorithm based Selective neural network Ensemble, developed using the Multi-Layered perceptron as a basic model for each network. -neural in ensemble. As a combination, GASEN was able to perform well in the work of classification with a fixed accuracy of 58% to 63%. The author obtained a promising 85% result using a simple trading strategy. Also, they were only focused on MLP while there are a number of other excellent retrospective methods such as random forest, neural wavelet networks and noninvasive neural networks.

While [4] uses different neural networks such as Recurrent Neural Network (RNN) and Long-Term Memory (LSTM) and 10-fold cross-sectional authentication. The author has studied the various trends in the Bitcoin Market and learned the key features used to predict the price. The various features used here are date, open, high, low, closed, volume, market snow.

After this they have analyzed the performance of the proposed model and the existing one has been developed according to the Mean Absolute Error (MAE). The MAE program came out to 0.0043s which was significantly lower than its current counterparts. As BTC prices are unstable and model training with RNN and LSTM has improved the system outcome. [5] uses a few statistical model to predict BTC values. They have considered BTC price prices for the four-year period from 2013 to 2017 based on time series methods especially the autoregressive integrated moving average (ARIMA) model and the function can ultimately achieve 90% accuracy in determining the bitcoin cost fluctuations over time short. . The author was able to predict the BTC prices of the 10-day pricing method using different analytical analyzes such as the AR, MA and the ARIMA model. They did not consider BTC prices gradually which would help predict prices more effectively.

Another study that used different ML algorithms to predict BTC values [6] where they used short-term memory. LSTM networks are a modern sequel learning method in-depth reading of time series predictions. However, very little research has been done using predicting financial series especially in the event of crypto-currencies. With this in mind the author proposed a new forecast framework for the LSTM daily BTC price forecast model. They used two different LSTM models namely the standard LSTM model and the LSTM model with AR 2). This study was a random time series, and the sequence of differences was not found. Both models are trained against different performance metrics such as MSE, RMSE, MAE and MAPE. The results confirmed that the LSTM model with AR (2) was more efficient than the standard LSTM model. [7] Attempts to determine the accuracy of the Bitcoin value in USD that can be predicted. The task of forecasting was accomplished with varying success through the use of the Bayesian optimized recurrent neural network (RNN) network and the long short-term memory network (LSTM). They used the popular ARIMA time series forecast model to compare in-depth study models. Deep indirect learning methods, beyond ARIMA's predictive performance. Advanced Learning models such as RNN and LSTM are clearly effective in predicting Bitcoin and LSTM prices that can predict long-term BTC values.

[8] This paper demonstrates high performance-based machine learning and retrospective models that predict Bitcoin price movements and prices in short and medium term terms. This paper shows the high performance of the machine based on the reading and retrieval stages of the models predicting Bitcoin price movements and prices in short and medium terms. In previous works, machine-based classification has been studied for one day only, while this work exceeds that using machine-based models for one-day, seven-thirty, thirty-ninety-nine. Improved models are more feasible and more efficient, classification models achieve up to 65% accuracy of next-day weather forecast and earn points from 62 to 64% accuracy of seventh-day ninety-year weather forecasts. [9] [10]

Apart from this one group studied the period from September 4, 2014, to August 31, 2018, by recording the number of times the word " Bitcoin " was posted on Twitter. The results showed that the number of tweets on Twitter could affect the BTC trading volume the next day. Some studies have shown the impact of user comments on online platforms on price fluctuations and the value of crypto currencies and found that BTC is particularly related to the number of positive comments on social media. They reported 79% accuracy and Granger causality testing, which means users' opinions are useful in predicting price fluctuations.

The fact that Crypto-currency has grown rapidly in popularity over thousands of years, daily traders and giant business conglomerates is an important issue around the world, not only that but to teach how to invest in crypto currency explain to newbies how crypto currency evolves and what it all is. it affects its values some of the reasons that inspired me to approach this topic.

The volatility of Bitcoin and Ethereum prices keeps investors amazed. Addressing the feelings and concerns of investors, the research website Finder and the international bank based in the UK, the international research team of Standard Chartered have done the job. They have made important predictions about the market trends of Bitcoin and Ethereum based on their potential strengths and reputation for investing. According to Finder, Bitcoin will reach a peak of \$ 107,484 by 2021, before reaching \$ 94,967. The Finder panel expects Bitcoin to jump to \$ 3, 60,179 by 2025. Standard Chartered researchers' prediction is that the price of Bitcoin will increase threefold from the current price, to \$ 50,000 - \$ 1,75,000 per -BTC each. . About 49 percent of the Finder panel thought it was the right time to buy BTC, while 39 percent planned to quit, and 12 percent wanted to sell it. So because of this market volatility there is a practical need for a machine learning model that can predict Bitcoin prices for end-of-day, 1-day, 7-day, 15-day, 30-day and 90-day investments to effectively invest in the brand of the above digital currency

3. CONCLUSIONS

This paper is an example of bitcoin symbols and describes studies conducted in the bitcoin sector, particularly Bitcoin. We also find the need to be able to predict Bitcoin prices in the medium to long term in order to achieve financial stability.

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