

PREDICTION OF BITCOIN PRICE USING MACHINE LEARNING ALGORITHMS

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Abstract

This project is implemented to predict the Bitcoin price accurately taking into consideration various parameters that affects the Bitcoin value. Bitcoins are put away in an advanced wallet which is essentially similar to a virtual financial balance. 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. Most measurable procedures pursue the worldview of deciding a specific probabilistic model that best portrays watched information among a class of related models. Likewise, most AI systems are intended to discover models that best fit information. By gathering information from different reference papers and applying in real time. Each and every project has its own set of methodologies of bitcoin price prediction. Machine learning models can likely give us the insight we need to learn about the future of Crypto currency. It will not tell us the future but it might tell us the general trend and direction to expect the prices to move.

Keywords-svm algorithm, knn algorithm, dataset.

1. Introduction

1. Virtual currencies

Virtual currencies are a form of cryptocurrency which is an impressive technical achievement in digital marketing, nevertheless. Virtual currencies live on, and they couldn't fully replace fiat or conventional currencies. In the current study, we are trying to show an interesting new perspective from which view of economics questions surrounding currency governance, the characteristics of money, political economy of financial intermediaries, and the nature of currency computation Virtual currencies become the most favorable and used for commercial enterprise transactions all over the world [1, 2]. The popularity is due to its innovative characteristics such as transparency, simplicity, and increasing acceptance through the world. In the current time, bitcoin is the popular flourishing virtual currency.

The virtual currency market value is close to 90 billions of dollars, but it varies from time to time. Bitcoin is a peer-to-peer cryptocurrency in which all transactions are not regulated or controlled by any third party. Third-party intervention between customers is impossible. It is highly volatile market price working 24/7. Market capitalization of bitcoin is increased through time to time. In the current time, more than 71 billions of dollars publicly traded. Due to its open-source nature, clear, transparent, simple, and time is saving which leads all virtual currencies in the world. Bitcoin is a worldwide and most popular cryptocurrency, first introduced in 2008 and exploited as open source in 2009 by a person called Satoshi Nakamoto, but it became highly popular in 2017. Bitcoin functions as a decentralized moderate of electronic cash, with transactions proved and transcribed in a public distributed ledger (blockchain) without any third-party intervention. Transaction blocks consist of secure shell algorithm which is used to connect each other, and blocks are served as a non-editable data which is recorded when the transaction is being held. Then any virtual currency especially bitcoin has been adopted by the people, and the virtual currency market trend has been growing up.

The popularity of bitcoin is increased within a short period of time. Different technologies and business companies are joined with bitcoin. As different researchers assured that after 2015 around 100,000 technology and business companies have started the bitcoin market. Some of the popular companies which are joined with bitcoin are Amazon, Microsoft, Overstock, Dell, and others [1]. Many works have been done to predict time series, as well as BTC value. However, any deep learning models have not been much used yet to predict the BTC price value. Knowing the deep learning models become state-of-the-art neural network architecture that improves prediction accuracy in various domains including time series, we consider applications of deep learning to predict the BTC price value. In coming sections, we will explore previous works done on BTC price prediction, discuss deep learning models to predict the time series, and focus on three main articles which will serve as foundation of our work.

Primarily, the main challenge of bitcoin exchange rate is its high rate of price fluctuation. High price volatility implies a certain measure should be taken to predict the price of bitcoin accurately. Knowing the forecasting activity is necessary to tell about the future price of bitcoin and build trust as well as acceptance throughout the world. Influenced by a variety of factors, such as political system, public relations, and market policy of a country, can determine economical role of bitcoin and international relation of countries on different market strategies.

2. Bit coin

Bitcoin is the most popular decentralized way of virtual currency which has a great role in the free market economy and avoids the intermediary of another third party between customers. The main objective of our study is to forecast the bitcoin price with improved efficiency using deep learning models and minimizing the risks for the investors as well as policy-makers.

II MODULES

1) Data Preprocessing

Data preprocessing is a process of preparing the raw data and making it suitable for a machine learning model. It is the first and crucial step while creating a machine learning model. Data preprocessing is required tasks for cleaning the data and making it suitable for a machine learning model which also increases the accuracy and efficiency of a machine learning model. We split the dataset up into training and test set, and standardize its features. Standardisation is good practice as it reduces over fitting in cases where variance for some features may be higher than others. The LSTM model requires us to organize the data in blocks. Our data is grouped at one-minute intervals and we'll use blocks of 50 minutes to predict the next block. Bitcoin is being traded in a lot of online exchanges at the moment with the biggest being BitFinex, Bitthumb, GDAX, Poloniex, and Bitstamp. I collected data from Bitstamp since it's one of the older exchanges and haven't had any hacking or market manipulation complaints. We have collected the

data from 2013 to 2018 for Bitstamp available via their API. This dataset contains opening price, closing price, low, high, volume of each record.

2) Weighted Price

Technical analysis of stocks is in some ways very similar to feature engineering. Technical analysis and technical indicators are used by traders and stock market experts to predict the future price. Every trader prefers their own technical indicator with each indicator working differently in different environment. Rather than using just the closing price, it is also preferable to know the volume weighted price. A price change due to a movement of a lot of volume usually has a bigger effect on the market rather than a price change due to a smaller volume movement. So a Volume Weighted price is a good technical indicator.

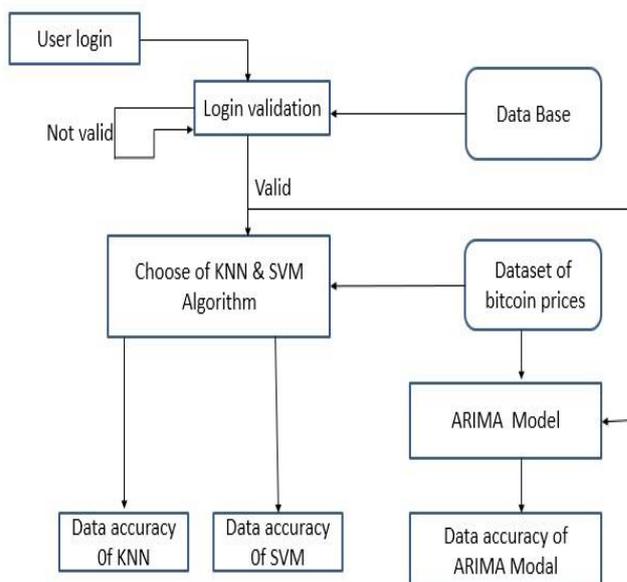
3) Data Preparation and Price Prediction

Rather than converting this into an exact price prediction, It is changed it into a classification problem since that is what the traders are interested in. Since the price of Bitcoin has also changed from a single digit to now five digits, it is also difficult for the neural network to learn this behavior if the price is not standardized or normalized. We created five classes to classify the future value: Within 0.4% of the closing price. Between 0.4% to 0.8% above the closing price. Between 0.4% to 0.8% lower the closing price. More than 0.8% higher than the closing price. More than 0.8% lower than the closing price. When the Bitcoin price is 10,000 USD, 0.8% constitutes an \$80 change. Which is quite a reasonable assumption given the volatility of Bitcoin this much change can happen in a time period of 20 minutes.

4) Simulation Result

The results were never able to converge the accuracy to a single value, the more the neural network learned the better the results obtained. It can be run to get the following range of classification accuracy: Train dataset accuracy : 75%-95% Test dataset accuracy : 70%-90% I believe that for trading, these accuracies are very good predictions. Given the volatile nature of Bitcoin, it is understandable that the prediction accuracy changes over time.

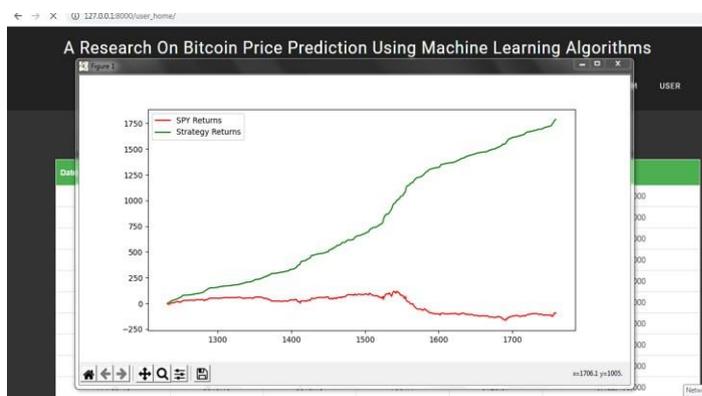
III.DATAFLOWDIAGRAM



IV. SCREENSHOTS



Date	Open	High	Low	Close	Volume
20-Feb-18	11231.8	11958.5	11231.8	11403.7	9,926,540,000
19-Feb-18	10552.6	11273.8	10513.2	11225.5	7,652,090,000
18-Feb-18	11123.4	11349.8	10326	10551.8	8,744,010,000
17-Feb-18	10207.5	11139.5	10149.4	11112.7	8,660,860,000
16-Feb-18	10135.7	10324.1	9824.82	10233.9	7,236,160,000
15-Feb-18	9488.32	10234.8	9395.58	10196.4	9,062,540,000
14-Feb-18	8599.92	9518.54	8599.92	9494.63	7,909,820,000
13-Feb-18	8926.72	8958.47	8455.41	8598.31	5,696,720,000
12-Feb-18	8141.43	8965.92	8141.43	8926.57	6,256,440,000
11-Feb-18	8616.13	8616.13	7931.1	8129.97	6,122,190,000





V. CONCLUSION

It concludes and believes the predictor will not work when the market is being manipulated. In the past, the market manipulation of Bitcoin was much easier but now since the crypto currency market cap is above 300 billion, it would be much difficult to manipulate the market. The price of bitcoin has also fluctuated a lot during this time and it would be preferable to use a standardized or normalized price of Bitcoin. Furthermore, the user sentiment and the wisdom of the crowd play a huge role in Bitcoin price. There has been a lot of work done in trying to convert the social media sentiments and news from around the web into quantifiable terms in order to find the social influence on Bitcoin price. Adding such indicators in our data would greatly enhance the predicted price of Bitcoin.

VI. FUTURE ENHANCEMENT

In future, it is possible to provide Prediction of other cryptocurrencies also. And make user interfaces of web application into next level. Including top cryptocurrencies by this we can listing it in order by their current price, it provides ease identification of top cryptos.

VII. REFERENCE

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