

Forecasting And Analysing the Prices of Cryptocurrency

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Abstract-In this paper mainly focused on analysing the prices of cryptocurrency. Initially collect the bitcoin datasets for trained dataset. Then will provide the user queries for bitcoin testing data set. After classification process of random forest algorithm and LSTM(long short-term)algorithm using to the already analysing data set and user provide current dataset. The performance of the techniques is evaluated based on accuracy, sensitivity, and specificity, precision. Our results show that non-trivial, but ultimately simple, algorithmic mechanisms can help anticipate the short-term evolution of the crypto currency market.

Keywords: cryptocurrency, analysis, long-short term algorithm, random forest algorithm.

INTRODUCTION

Bitcoin is a decentralized electronic payment system introduced by Nakamoto. The Bitcoin node communicate using a peer-to-peer (P2P) network. To achieve consensus among nodes, Bitcoin uses a probabilistic distributed consensus protocol. In Bitcoin, electronic payments are done by generating transactions that transfer bitcoins among users.

The destination address is generated by performing a series of irreversible cryptographic hashing operations on the user's public key.

In Bitcoin, a user can have multiple addresses by creating numerous public keys, and these addresses could be associated with one or more of her wallets. The private key of the user is required to spend the owned bitcoins in the form of digitally signed transactions. Using the hash of the public key as a receiving address provides the users a certain degree of anonymity (i.e., pseudonymity), and it is recommended the practice to use different Bitcoin address for each receiving transaction.

Bitcoin price forecasting involves careful attention due to its data characteristics such as highly volatile, highly non-linear, non-stationary, non-linear dynamics, no periodicity, existence of spectrum of scaling components, noisy data, and randomness. Researchers worldwide have used various

techniques and methodologies from the domains of statistical, machine learning, and deep learning.

Recently, Bitcoin technology is grabbing lots of attention from government bodies due to its increasing use by the malicious users to undermine legal controls. In authors call bitcoins Enigmatic and Controversial Digital Cryptocurrency due to difficult concepts underneath the Bitcoin system and severe opposition from the government. According to the current bitcoin exchange rate is approximately USD 9000 (as of April 2018) from around USD 1000 at the start of the year 2016.

The popularity of crypto currencies has skyrocketed in 2017 due to several consecutive months of super exponential growth of their market capitalization. Today, there are more than 1, 500 actively traded crypto currencies capitalizing over \$300billions, with a peak of the market capitalization totalling more than \$800billions in Jan. 2018. Between 2.9 and 5.8millions of private as well as institutional investors are in the different transaction networks, according to a recent survey, and access to the market has become easier over time. Major crypto currencies can be bought using fiat currency in a number of online exchanges and then be used in their turn to buy less popular crypto currencies. The accurate prediction of the Bitcoin price can not only provide decision support for investors but also provide a reference for governments to make regulatory policies. . 6 Machine learning is a subfield of artificial intelligence, which is broadly defined as the capability of a machine to imitate intelligent human behaviour. Artificial intelligence systems are used to perform complex tasks in a way that is similar to how humans solve problems.

SYSTEM ARCHITECTURE

The purpose of this study is to find out with what accuracy the direction of the price of bitcoin can be predicted using machine learning methods. This is fundamentally time series prediction problem.

While much research exists surrounding the use of different machine learning techniques for time series prediction, research in this area relating specifically to bitcoin is lacking. In addition,

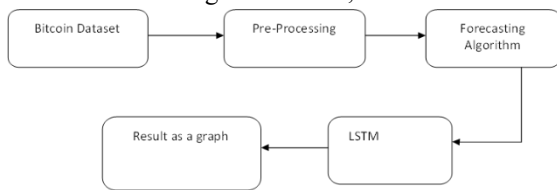


Fig.1

bitcoin as a currency is in a transient stage and as a result is considerably more volatile than other currencies such as the USD. Interestingly, it is the top performing currency This provides an answer to the sub research question. out of the last five years. Thus, its prediction offers great potential and this provides motivation for research in this area. As evidenced by an analysis of the existing literature, running machine learning algorithms on a GPU as opposed to a CPU can offer significant performance improvements. This is explored by bench marking the training of the RNN and LSTM network using both the GPU and CPU. This provides an answer to the sub-research question .Finally in analysing the chosen dependent variables, each variable importance is assessed using the random forest algorithm.

As the length of popularity largely depends on the amount of security built on the system which surpasses all its other benefits, we aim to investigate the associated security and privacy issues in Bitcoin and its underlying techniques. We show that simple trading strategies assisted by state-of-the-art machine learning algorithms outperform standard benchmarks. Our results show that nontrivial, but ultimately simple, algorithmic mechanisms can help anticipate the short-term evolution of the crypto currency market. This system is capable of providing most of the essential features required to predict the level of bitcoin in the future.

MATERIALS AND METHODS

Existing system:

In existing system, we analysed stock markets prediction, suggests that these methods could be effective also in predicting crypto currencies prices. However, the application of machine learning algorithms to the crypto currency market has been limited so far to the analysis of Bitcoin prices, using random forests, Bayesian neural network, long

short-term memory neural network and other algorithms. These studies were able to anticipate, to different degrees, the price fluctuations of Bitcoin, and revealed that best results were achieved by neural network-based algorithms. Deep reinforcement learning was showed to beat the uniform buy and hold strategy in predicting the prices of 12 crypto currencies over one year period.

Proposed system:

Here, we test the performance of three models in predicting daily crypto currency price for 1,681 currencies. Two of the models are based on gradient boosting decision trees and one is based on long short-term memory (LSTM) recurrent neural networks. In all cases, we build investment portfolios based on the predictions and we compare their performance in terms of return on investment. We find that all of the three models perform better than a baseline ‘simple moving average’ model where a currency’s price is predicted as the average price across the preceding days, and that the method based on long short-term memory recurrent neural networks systematically yields the best return on investment.

Advantages:

- More accurate
- Time efficient
- Analyses long term data at a time

Software Requirements:

- Operatingsystem:Windows8/10
- Coding language : python 3.6
- API’S : anaconda- jupyter notebook

Hardware Requirements:

- Processor : core i3/i5
- RAM : 4GB
- Hard disk drive: 20GB

1.LONG-SHORT TERM ALGORITHM

The LSTM method was mostly used of predicting price of bitcoins. In this the mean square error method is used to optimize the error rate. This doesn’t have the limit of amount of input data and also it overcomes the problem seen in the case of random forest algorithm. It can hold data for over a long period of time and analyses long term of data in predicting the price carefully. This is a type of recurrent neural network that is used in profound learning, as very large architectures can be

trained. LSTM cell contains forget and remember gates that allow the cell to decide which information to block or transmit based on its strength and importance.

2.RECURRENT NEURAL NETWORKS

The recurrence neural networks serves as the helping side along with the LSTM. It can be used as an analyser of the observations obtained in the bitcoin data. It captures the behaviour of every observation and models it accordingly. This translates the obstacle of modelling technique into a sequence problem. It deals with the modelling complications of observations of erratic behaviour by implementing the technique called factoring .

3.RANDOM FOREST ALGORITHM

The random forest method was also one of the methods of predicting the price of bitcoins. But this had a drawback that it can forecast the data for only short period of time. The RF method is able to predict or analyse the data of 20 or 10 days of data. It can hold data of very short period of time.

RESULTS

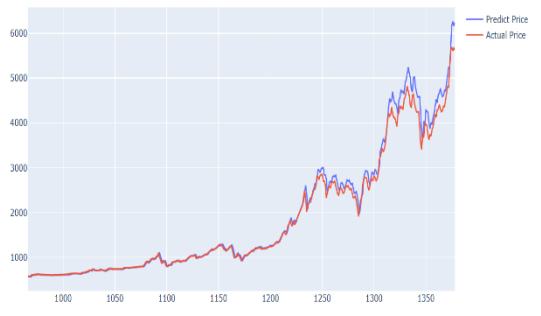


Fig.2 actual and predicted prices

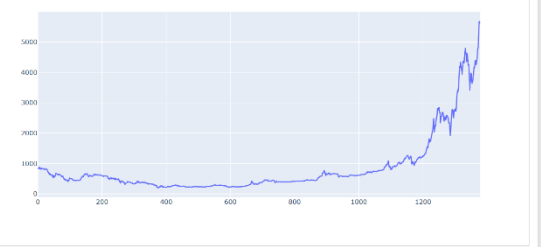


Fig.3 weighted prices

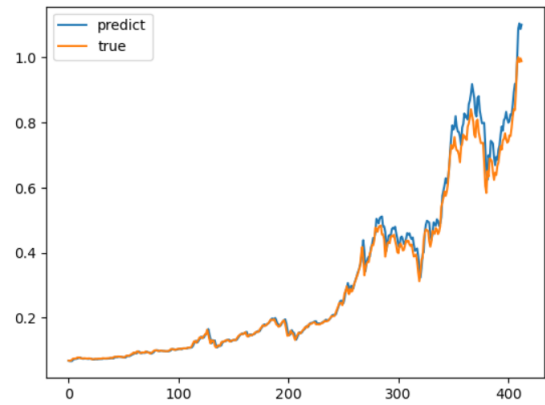


Fig.4 difference between predicted and true values

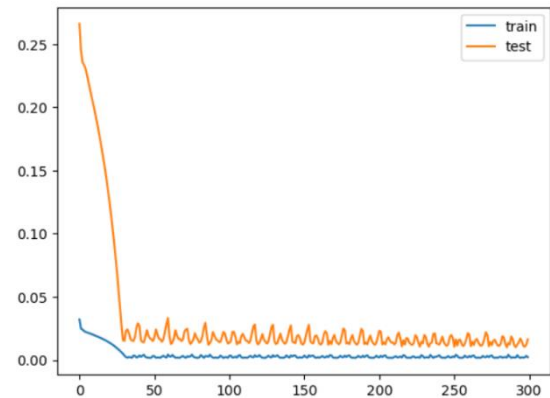


Fig.5 level of trained and test data values

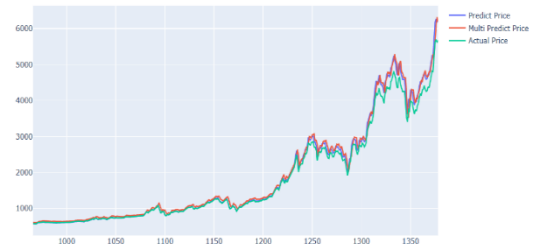


Fig.6 accuracy of predicted ,multi predicted, actual prices

CONCLUSION

Deep learning models such as the RNN and LSTM are evidently effectively learners on training data with the LSTM more capable for recognizing longer term dependencies. However, a high variance task of this nature makes it difficult to transpire this into impressive validation results. As a result, it remains a difficult task. There is a fine line to balance between overfitting a model and preventing it from learning sufficiently. After establishing the learning framework and completing the normalization, we

intend to use the two methods mentioned above and choose the best method to solve the Bitcoin prediction problem. In terms of the dataset, based on an analysis of the weights of the model the difficulty and hash rate variables could be considered for pruning. Deep learning models require a significant amount of data to learn effectively from. The dataset utilized contained 1066-time steps representing each day. If the granularity of data was changed to per minute this would provide 512,640 data points in a year. Data of this nature is not available for the past but is currently being gathered from CoinDesk on a daily basis for future use.

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