

Machine Learning Modeling for Prediction Of Bitcoin Market Price Using a Recurrent Neural Network with Long Short Term Memory

**Tadi Srinivas¹, Meghana Jakkula², Sai Joshitha Chitikala³,
Mohammed Zaid Sikander⁴**

#1Associate Professor,Dept Of CSE. Gitam Deemed to be University

Rushikonda, Andhra Pradesh, India

#2,#3,#4Student, ,Dept Of CSE. Gitam Deemed to be University

Rushikonda, Andhra Pradesh, India

Abstract— Machine learning based on neural networks has found applications in a wide range of sectors, including translation, finance, distribution, and the medical world, as well as cognition. This paper demonstrates a Recurrent Neural Network Learning Model based on LSTM that evaluates previous Bitcoin prices and predicts the upcoming one. Statistical analysis/methods: This model predicts the actual and anticipated Bitcoin prices for the following 81 days by learning the previous 30 days' prices and then forecasting the next day's price. The regularised data set for modelling is separated into test and training data sets at a 1:9 ratio. The latter set is divided once more into training and verification data. This study's Machine Learning will require the use of a Neural Network library and the Keras framework. Findings: Fitting the model entails determining the model's weight by optimising the procedure while using training data. In this paper, the batch size of the fit function is 11 and the number of epochs is 30. As learning is processed more frequently, the loss declines more monotonously, and it eventually converges to a more regular value. In other words, there is no overfitting.

1.INTRODUCTION

Artificial Intelligence is referred to as an acting system that does Natural Language Processing, Automatic Inference, Computer Vision, Voice Recognition, Knowledge Representation etc., pretending to be a human being. Machine learning, the gist of Artificial Intelligence, divides learning into either supervised or unsupervised depending on whether there is a label in learning data. Machine Learning, a method solving a problem by using methods like clustering, classification, forecasting, and so on, ought to be defined as a learning model in advance which the human beings' brains process problems with[1,2].In machine learning, predictive analysis supplies appropriate consultation and information, computing trends and future probabilities

and then predicting potential result. Recurrent Neural Network generates following data prediction through learning the context, that is, the relationship among data in estimation problem dealing with such time series data as monthly sales, price index, unemployment rate, exchange rate, and stock price[2]. The observed value of the time series data has a time sequence. In order to analyze the temporal series data such as exchange rates or stocks, there can be several methods: moving average which is able to anticipate the future price, computing the average of the past and the present prices, ARIMA(Auto-Regressive Integrated Moving Average) which expects the future value, while modeling the data, the regression analysis which estimates how one or more independent variables influence on the dependent ones, and the

forth. Along with Artificial intelligence, cryptocurrency has been recently the subject of IT Convergence to which both tremendous technologies and the social interest have been increasingly devoted. Designating Busan as the unfettered free district for the Blockchain, Korea has promoted the activation of the Block Chain, a new local growth engine. The district for Blockchain not only leads new technologies but dominates the market of new industries in advance, providing special permission free from the regulations and demonstrations to application industries.

2.LITERATURE SURVEY

2.1 Rustgi N. Bitcoin Exchange QuadrigaCX Goes Bankrupt; Will Ernst and Young Be Able To Recover The Users' Assets?.[Internet]. Available from: <https://coingape.com/quadrigacx-goes-bankrupt-ernst-young-recovery/>

Big Four audit association Ernst & Young (EY) has argued that the now-shuttered Canadian crypto change QuadrigaCX must be positioned in financial ruin as a substitute of being restructured as section of ongoing creditor safety proceedings. EY proposed the direction of motion in its "Fourth Report of the Monitor" filed with the Supreme Court of Nova Scotia on April 1.

As before reported, QuadrigaCX stated it had misplaced get entry to to its bloodless pockets holdings following the loss of life of its founder, Gerald Cotten, in December 2018 — Cotten having ostensibly been the sole character with get entry to to the wallets' corresponding keys.

With the reportedly inaccessible crypto accounting for the considerable majority of the exchange's assets, QuadrigaCX owes over \$198.4 million to an estimated 115,000 users. QuadrigaCX filed for creditor safety in early February,

appointing EY as a screen to the proceedings.

In the auditor's fourth file as Monitor for the case, EY's felony group argues that the ongoing restructuring method for QuadrigaCX underneath the Companies' Creditors Arrangement Act (CCAA) have to shift to an choice technique underneath the Bankruptcy and Insolvency Act (BIA). The authors propose:

2.2 ChongN.Fidelity Investments To Launch Bitcoin Trading For Institutional Clientele. [Internet]. Available from: <https://blockonomi.com/fidelity-launch-bitcoin-trading-for-institutional-clientele/>

A digital currency, Cryptocurrency is dealt on the web with no commodity cash as encryption strategies are used. That can be keep on the computer, besides any issues about both theft or loss, and doesn't spend any cash being produced and saved. It has now not simply the potential of charge and circulation as identical as that of gold or cash; excessive scale of fee like a actual property or a inventory as well. Due to transaction confidentiality, however, it can also be abused in tax evasions or in drug dealings. Cryptocurrency is designed to let the persons do freely economic dealings in P2P(peer to peer) way. Blockchain science is a device that shops on-line transactional facts on the block, which have to be authorized to be linked with an present chain. It capacity the events to a transaction alternate cost with one another. Bitcoin based totally on Blockchain ability was once invented by way of Nakamoto Satoshi in 2009. It realized the thought of Bit Gold and B-money and made up for faults like double expenditure[3]. Bitcoin is saved as a kind of a pockets file which is given its very own address, and the transactions of Bitcoin is performed on the groundwork of the address. Block is a bundle of transactional information of Bitcoin each 10 minute. That

is, Blockchain is a form of buying and selling e book which covers buying and selling record. Figure 1, the diagram suggests market fee of Bitcoin from 2009 to 2019[4].

2.3 Hassani H, Huang X, Silva E. Big-Crypto: Big Data, Blockchain and Cryptocurrency. Big Data and Cognitive Computing.(2018)Oct;2(4):34, DOI:<https://doi.org/10.3390/bdcc204003> 4

Cryptocurrency has been a trending theme over the previous decade, pooling extremely good technological energy and attracting investments valued over trillions of bucks on a world scale. The cryptocurrency technological know-how and its community have been endowed with many optimal points due to its special architecture, which additionally decided its international efficiency, applicability and records intensive characteristics. This paper introduces and summarises the interactions between two sizable principles in the digitalized world, i.e., cryptocurrency and Big Data. Both topics are at the forefront of technological research, and this paper focuses on their convergence and comprehensively evaluations the very current purposes and trends after 2016. Accordingly, we purpose to existing a systematic overview of the interactions between Big Data and cryptocurrency and serve as the one quit reference listing for researchers with regard to figuring out lookup gaps and directing future explorations.

3.PROPOSED SYSTEM

A Cryptologic pioneer, David Chaum, devised Blind Signature technology, which telecommunicates the encoded messages sealing digital signature, and resulted in inventing Ecash. That is the fundamental business cryptocurrency. Bit Coin in 2009 used to be the new cryptocurrency done with Block Chain technology. After that, most cryptocurrencies have been extended

with Block Chain based. Ethereum emerged as the developed cash which has offerings and functions in addition to Block Chain device in 2015[5]. WEF(World Economic Forum) counseled that the rating of Blockchain should be the fourth of 12 future applied sciences in the Global Risks Report. Furthermore, in 10 years, 10 percentage of GDP all over the world is anticipated to be primarily based on Blockchaintechnology[6]. In April 2019, about forty primary banks round the world introduced that they would scan CBDC(central financial institution digital currencies) situated on Blockchain[7]. Blockchain, which is encrypted with exchange statistics on the public or personal network, is a different ledger shared with applicable community participants.

3.1 ALGORITHMS

Long short-term memory (LSTM) is an artificial recurrent neural network (RNN) architecture[1] used in the field of deep learning. Unlike standard feedforward neural networks, LSTM has feedback connections. It can not only process single data points (such as images), but also entire sequences of data (such as speech or video). For example, LSTM is applicable to tasks such as unsegmented, connected handwriting recognition,[2] speech recognition[3][4] and anomaly detection in network traffic or IDSs (intrusion detection systems).

A common LSTM unit is composed of a cell, an input gate, an output gate and a forget gate. The cell remembers values over arbitrary time intervals and the three *gates* regulate the flow of information into and out of the cell.

LSTM networks are well-suited to classifying, processing and making predictions based on time series data, since there can be lags of unknown duration between important events in a time series.

LSTMs were developed to deal with the vanishing gradient problem that can be encountered when training traditional RNNs. Relative insensitivity to gap length is an advantage of LSTM over RNNs, hidden Markov models and other sequence learning methods in numerous applications.[*citation needed*]

The advantage of an LSTM cell compared to a common recurrent unit is its cell memory unit. The cell vector has the ability to encapsulate the notion of forgetting part of it's previously stored memory, as well as to add part of the new information. To illustrate this, one has to inspect the equations of the cell and the way it processes sequences under the hood

4.RESULTS AND DISCUSSION

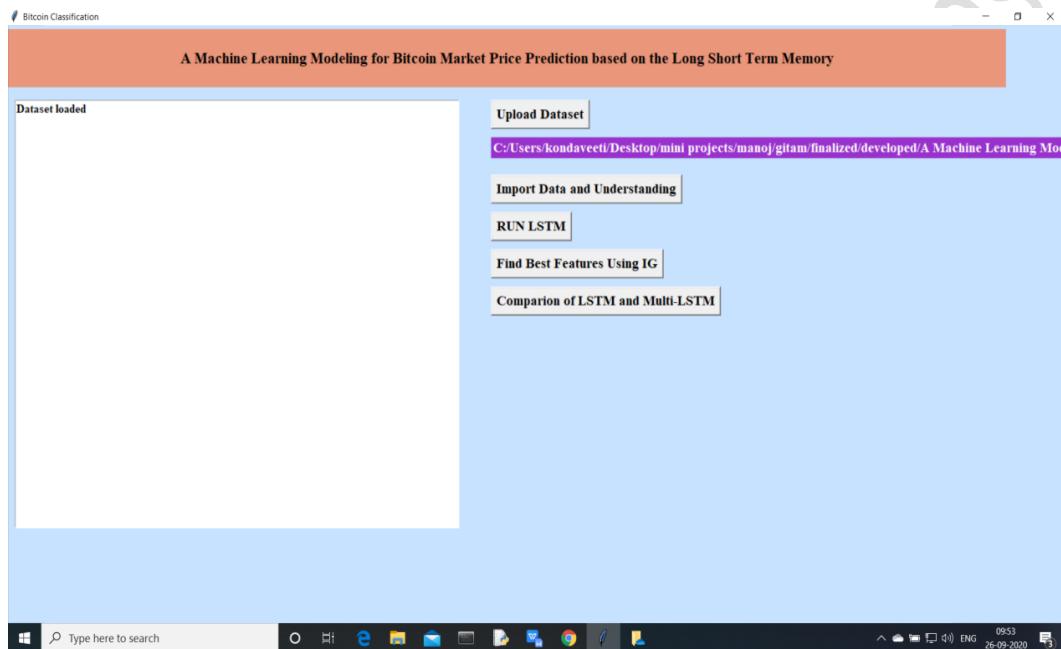


Fig 2:Data will be upload and filename will be shown on the label path

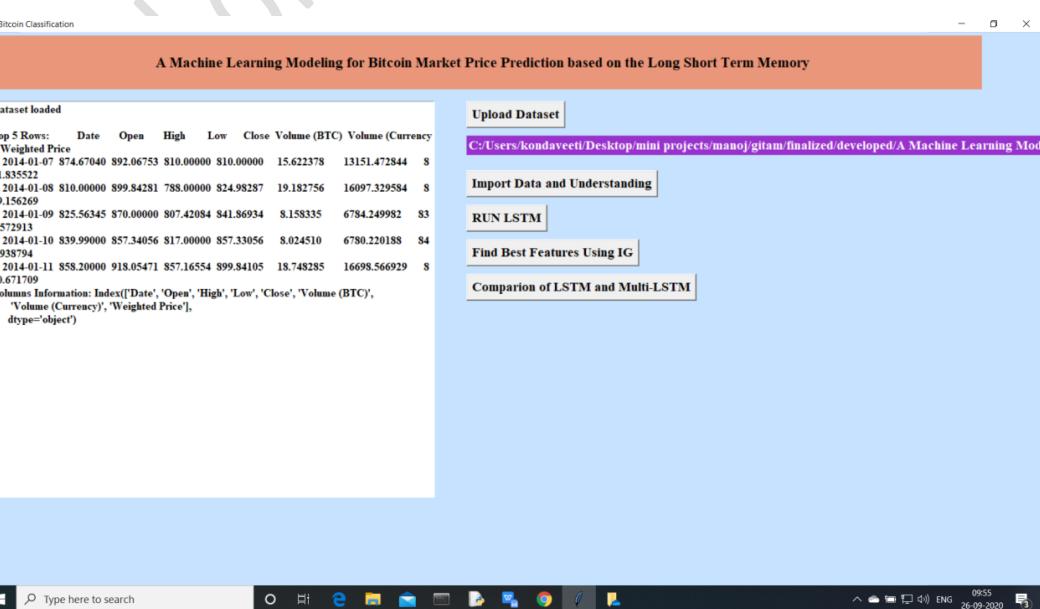


Fig 1:Data is read using pandas and basic information will be displayed on the screen and data is preprocessedd

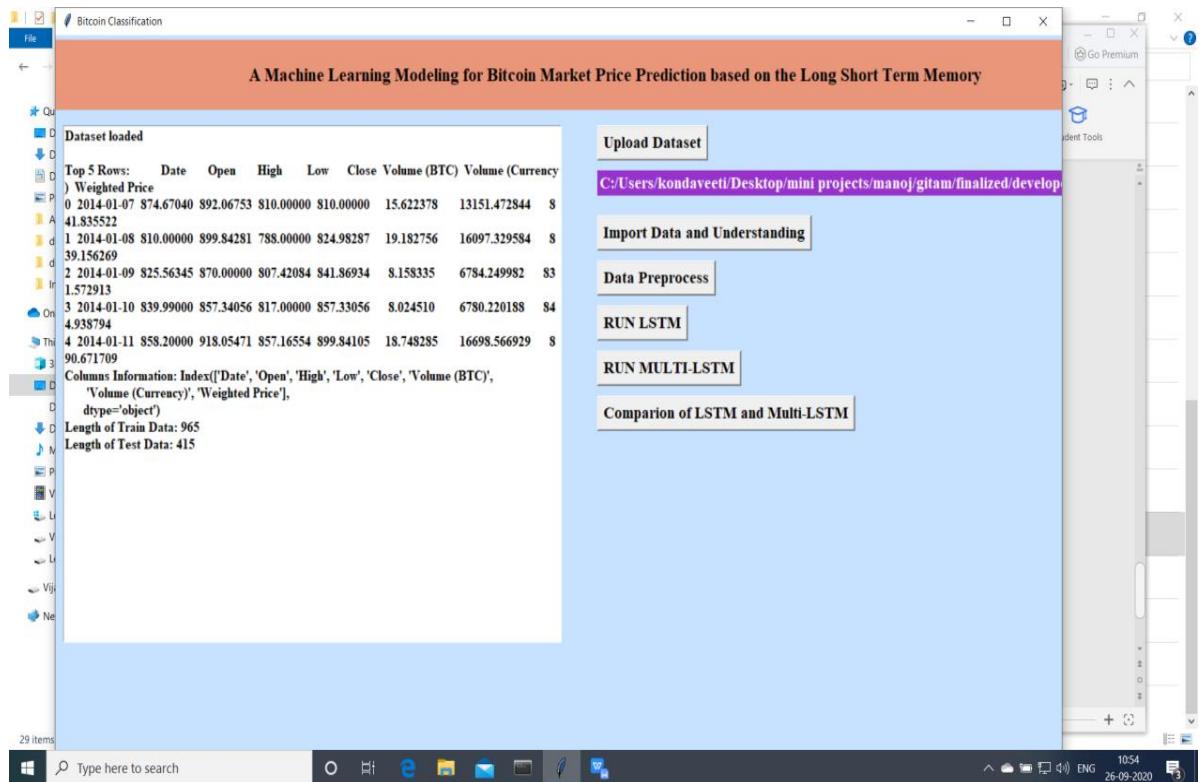


Fig 2:Data Preprocess will be done in the above and we will split the data into train and test

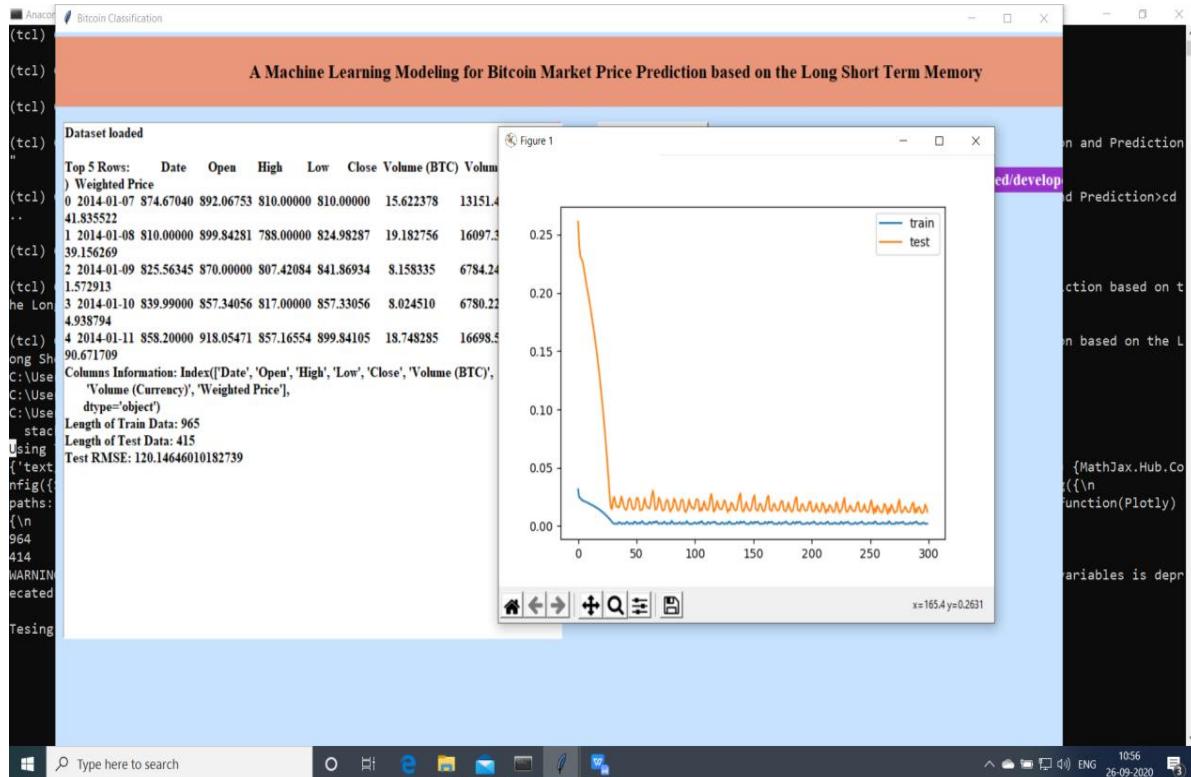


Fig 3:ALSTM will be strained using train data and will predict using test data and graph of trained will be shown

5.CONCLUSION

Recently, AI technological know-how has been used in a range of realistic fields and remarkably has grown up. AlphaGo (Alpha Zero) made by means of Google in 2016 made the world have an awful lot pastime in Artificial Intelligence. In 2019, three years later from then, Alpha Zero, a identify without for Go, has developed into a general-purpose AI device that learns on its very own and will increase its triumphing fee besides any extra learning. This paper proposes Artificial Neural Networks so as to forecast the subsequent day fee of Bitcoin, important of about \$20,000 per a piece in December 2017, on the groundwork of the previous prices. The error fee and weight alternate price are in contrast with the aid of offering the proper rate and forecast fee of Bitcoin for eighty one days in the way of gaining knowledge of the 30- day preceding expenditures and predicting the charge of the subsequent day. Experiments exhibit that the weight

commencing at zero outcomes in converging to a unique fee after growing and reducing repeatedly, and that its overall performance is enhancing as gaining knowledge of goes on. The lookup will purpose at growing the great forecasting cryptocurrency software from making use of quite a number experiments of Artificial Neural Network studying models, including and technically inspecting statistics from a lot greater cryptocurrency exchanges.

REFERENCES

- [1] Archana C, Savita K, Raj K. Machine Learning Classification Techniques: A Comparative Study. International Journal on Advanced Computer Theory and Engineering (IJACTE) (2013);2(4):21-25.
- [2] Pavlyshenko BM. Machine-Learning Models for Sales Time Series Forecasting. Data. (2019) Mar; 4(1):15. DOI:10.3390/data4010015.

[3] Nakamoto S. Bitcoin: A Peer-to-Peer Electronic Cash System. Available from: <https://bitcoin.org/bitcoin.pdf>

[4] BLOCKCHAIN.[Internet]. Available from: <https://www.blockchain.com/en/charts/market-price?timespan=all>

[5] Kim JS.A Survey of Cryptocurrencies based on Blockchain: Journal of the Korea Society of Computer and Information.(2019)Feb;24(2):67-74. DOI: <http://dx.doi.org/10.9708/jksci.2019.24.02.067>

[6] Cann O. Artificial Intelligence & Robotics Top List of Technologies in Need of Better Governance. [Internet]. Available from:[https://www.weforum.org/press/\(2016\)/11/artificial-intelligence-robotics-top-list-of-technologies-in-need-of-better-governance/](https://www.weforum.org/press/(2016)/11/artificial-intelligence-robotics-top-list-of-technologies-in-need-of-better-governance/)

[7] Lannquist A. [Internet]. Available from:[https://www.weforum.org/agenda/\(2019\)/04/this-new-form-of-currency-could-transform-the-way-we-see-money/](https://www.weforum.org/agenda/(2019)/04/this-new-form-of-currency-could-transform-the-way-we-see-money/)

[8] [Internet]. Available from: <https://www.pluralsight.com/guides/blockchain-architecture>

[9] Gola Y. 3 Reasons Bitcoin Price Will Sprint Beyond (2019)-High \$6,000. [Internet]. Available from: <https://www.cnn.com/3-reasons-bitcoin-price-will-sprint-beyond-2019-high-6000/>

[10] Goh B, John A. China wants to ban bitcoin mining. [Internet]. Available from: <https://www.reuters.com/article/us-china-cryptocurrency/china-wants-to-ban-bitcoin-mining-idUSKCN1RL0C4>