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Bitcoin Price Prediction Using Deep Learning

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Abstract: Bitcoin is an online currency developed in 2009. Bitcoin is a visual and cloud-based record that any individual authority can control. The cost of bitcoins has increased dramatically, and it is difficult to predict future costs with each Bitcoin. This project uses an in-depth study model to predict Bitcoin value to analyze the digital currency market. The proposed system uses the LSTM algorithm to predict the price of bitcoin in advance. This program can provide many of the key features needed to predict the level of bitcoin in the system. This model helps the user to decide to invest in Bitcoin.

Keywords: Bitcoin, Price, Prediction, Cryptocurrency Market, Using Deep Learning

INTRODUCTION

Unlike conventional stock market volatility, cryptocurrency market volatility is very high, and although it is associated with conventional stock market features, it is not very stable. To be sure, these business sectors are divided and unregulated and dependent upon extortion. Numerous business people put resources into Blockchain, a notable innovation under the most famous mystery monetary standards, including Bitcoin. We can anticipate that this number should develop as the Bitcoin administration grows. A many individuals are estimating about the cost of bitcoin. Speculating the Bitcoin market might give an open door to critical returns, yet it might likewise imply a lot higher gamble. Consequently, passing judgment on the best opportunity to enter the market is vital to create a gain and not lose large chunk of change. The cost of Bitcoin changes everyday, as does the cost of government issued types of money. Notwithstanding, Bitcoin cost changes are a lot greater than government issued money changes. Subsequently, finding out about the value pattern representing things to come can be vital. A few internet based stages have made accessible a few specialized examination instruments that permit bitcoin theorists to distinguish market patterns and feeling; how much exploration researching the future cost of bitcoin is expanding.

OBJECTIVE

The goal is to find out what the predictable accuracy of the Bitcoin price is in USD. Price data are taken from the Bitcoin Price index

This project describes the performance of the line deceleration and the Long-Term Memory model in predicting Bitcoin values. Due to its growing popularity, Bitcoin has become an investment and works in Blockchain technology to expand other cryptocurrencies.

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This makes it very difficult to predict its significance. That is why this prediction is tested with the help of the Machine Learning Algorithm. It works: We used Bitcoin data sets to test and train the machine learning method in this study.

With the help of python libraries, a data filter process is performed. Python provided the best data analysis and visualization features.

After understanding the data, we determine and apply the features or attributes relevant to the model. The model implementation is done, and the result is recorded.

The LSTM model, on the other hand, shows an average error rate of 0.08%.

This system compares the guessing results of a machine learning model. Because the linear regression provided very high accuracy compared to other in-depth learning models, we used it to compare you with the LSTM model.

LITERATURE SURVEY

Maintains a trade record between peers, and everyone records area unit encrypted**.** Every new record created contains a cryptographical hash of the previous block**.** Every record contains a timestamp and knowledge of the sender, recipient, and amounts**.** As Bitcoin is an associate degree in rising technology, few predictions area unit created regarding the long run worth of Bitcoin**.** Greaves and Au used rectilinear regression, depreciation and a vector support mechanism to predict future Bitcoin costs with low performance**.** Indira et al**.** planned a Multi-layer Perceptron model that supported non-linear autoregressive and External Inputs (NARX) to predict the following day's Bitcoin value**. [**1**]**

Bitcoin knowledge from the Gregorian calendar month 2012 to July 2018 is collected**.** It's a timestamp, the worth of Open, Up, Down, Close, volume listed in Bitcoin and USD, value weight and date**.** This study focuses on predicting the Bitcoin value within the next hour victimization of the value twenty-four hours past; therefore, the time and weighted stamp are employed within the model**. [**2**]**

Convolutional Neural Networks (CNN) is an associate degree in-depth learning technique that wants to differentiate**.** However, here we tend to area unit and ready it to be used in prediction**.** By setting a one-sided network rather than second or 3D, we will predict output by supplying an inventory of near values from our information**. [**3**]**

The authors think about bitcoin estimates and network assets split employing a mensuration model**.** Several alternative studies analyze the results of Blockchain and connected technologies elsewhere within the money sector in light-weight of the implications of central banking**. [**4**]**

It works fine because it can recollect the weights in every layer and insert the following layer**.** RNN uses internal memory to store knowledge sequences in every line with the expected worth at the following right cell**.** [**5**]**

EXISTING METHOD & PROPOSED METHOD

Existing Method

- Models designed victimization SVM don't work well if we have an outsized information set [6-15].
- Low performance if the information set is uproarious [16-22].
- Bitcoin worth Prediction victimization the machine learning algorithmic program theorem Regression and GLM / Random Forest takes the long method of filtering information [23-37].

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- Low reluctance to form predictions [38].

Proposed System

The proposed system uses a machine-learning algorithm to create a model to predict the price of bitcoin-based on historical data available on the website [39-45]**.** In the proposed model, bitcoin price prediction can be made using LSTM **(**Long-Term Memory**),** a machine learning algorithm**.** The tool used for the project is python software [46-67]**.** First, collect a data set using the Rest-API to collect the history of bitcoin prices on the Internet**.** Then create a data set model using the LSTM algorithm to predict bit-coin values daily**.** Predicted output data can be sorted as a graph using matplotlib [68-89]**.**

SYSTEM FUNCTION

Modules

- Data collection
- Pre-processing of data
- Difference

Data Collection

The first step in this project is to collect data that must be read and evaluated in order to discover the hidden relationships between the data members [90-111]. The effect of collecting and creating a database that can be analyzed for specific information in the database can lead to negative results [112-127].

Pre-processing of Data

Data processing is used to convert raw data into a pure data set. This procedure was performed before repeated analysis. A set of steps is known as pre-processing data [128-135].

DIFFERENCE

This process is used to classify different data into different classes. This process is also similar to integration [136-155]. Divides the data record into various segments known as classes. Unlike compilation, here we have information for different collections [156]**.**

LSTM Algorithm

Short-Term Memory (LSTM) is the construction of a repetitive neural network (RNN) used in in-depth learning [157-169]. LSTM networks are well suited for classification, analysis, and prediction based on timeline data, as there may be an unknown period between key events of the time series. Short-term memory networks (LSTM) are a type of continuous neural network that can learn order-dependent sequence predictive problems [170-177]. This is a necessary function for areas of complex problems such as machine translation and speech recognition. LSTM are a complex place for deep learning [178-185]. Short-term memory is a type of continuous neural network. It is a special type of continuous neural network that can read long-term dependence on data [186-191]. This is achieved because the repetitive module of the model has a combination of four interactive layers (figure 1).

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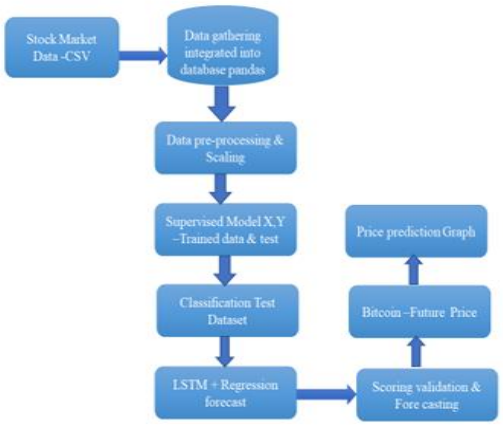

Figure 1: LSTM Algorithm

SYSTEM SPECIFICATION

Hardware Specification

Processor type: i5 processor

RAM : 8GB RAM, 64 bit

Storage : 1TB

Display : 20' colour display

Software Specification

Language used : python

Software tool used : PyCharm

Platform : Windows 8

SYSTEM SOFTWARE

Pycharm

PyCharm is compatible with Linux, macOS, and Windows architectures, used as multi-platform software**.** PyCharm is one of the best IDE in Python and supports two versions of Python 2 **(**2.7**)** and Python 3 **(**3.5 and above**).** PyCharm provides dozens of plugins, kits, and tools to speed up Python development and simultaneously reduce the effort taken to achieve the same [192-199]**.**

PYCHARM OF FEATURES

Project and Code Navigation

The code browsing feature makes navigation to class, feature, or file much easier for developers**.** It also helps to significantly reduce the time and effort it takes to edit and develop Python code**.** Special project views and design ideas are readily available**.** Lens mode helps the developer fully analyze and remove errors in all Python source code**.** Navigating code does not take much time to find an object, vector, etc**.** Engineers can switch between classes, files, and methods easily**.**

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Smart Code Editor

PyCharm comes with a smart code editor that allows advanced Python code to be written**.** Increases coding awareness and readability in various colours, such as syntax and highlighting errors in keywords, functions, and classes**.** The code editor guides completing the current code and provides a smart code finishing feature**.** Errors and troubleshooting, linter integration, and quick fixes are even easier**.**

Multi-Technology Development

To build web applications, Python developers can use PyCharm**.** Python IDE supports standard web technologies, such as CSS, TypeScript, HTML, Coffee Script, JavaScript, etc**.** In addition, Python, template languages, and SQL support are also provided**.** PyCharm also provides live editing to help developers / modify websites while delivering them live**.** Changes can be tracked directly in the web browser**.** Web frameworks are also available for development using NodeJS or AngularJS

HARDWARE REQUIERMENTS & SPECIFICATIONS

I5 Processor

The core is a family of I5 processors famous for its innovative design and integrated architecture that also offer the same computer benefits and is also good at providing users with excellent user interactive images.

Basic Features of the I5

The fundamental elements of the I5 highlights are altogether worked on contrasted with the past Intel variant. The absolute most famous and high level elements of I4 processors are recorded underneath. Intel I5 processor is completely stacked with the most recent HD designs with a strong and high level video motor that gives a smooth, great showcase and 3d graphical capacity. Everything I5 processors can be viewed as very good quality picture processors and ordinary PC media. Intel I5 processors likewise give hyper-stringing innovation to its clients, considering different capacities for both the client and the framework. Frameworks with I5 processors can perform and incorporate two errands all the while without causing execution postponements and bug fixes. They are receptive to the point that the exit of the frameworks should be possible at the same time also. We can undoubtedly say that the Intel I5 is the most ideal decision for homes and workplaces. Beyond what seven applications can run at the same time on the framework with an I5 processor incorporated into the motherboards (figure 2).

RESULTS

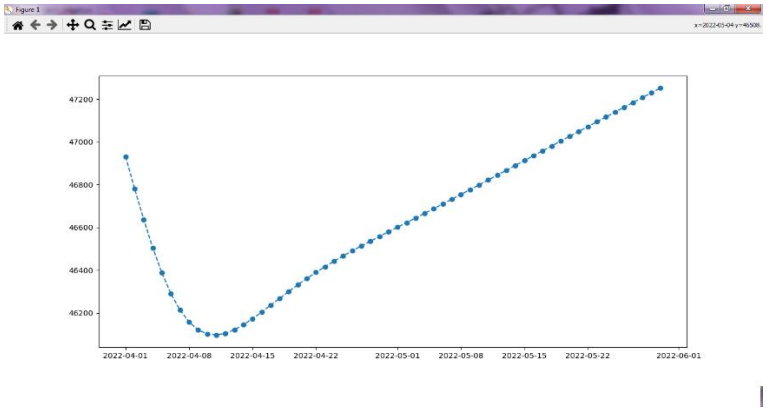

Figure 2: Result of Prediction Using Deep Learning

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CONCLUSION

The model requires less computer power while operating less than the RNN model. Tested using multiple variations of the same data set to determine the best result using the LSTM algorithm. To evaluate the efficiency of the neural network's output by adjusting the number of neurons and increasing and decreasing the number of layers. Test code in different areas to detect potential gaps and failure situations. Customize the code to suit the need for a holding position.

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