**A Machine Learning Modeling for Bitcoin Market Price**

**Prediction based on the Long Short Term Memory Recurrent**

**Neural Network**

**Introduction:**

encryption techniques are used. That can be save on the computer, without any

concerns about either theft or loss, and doesn’t spend any money being produced and

saved. It has not just the capacity of payment and circulation as same as that of gold or cash; high scale of value like a real estate or a stock as well. Due to transaction

confidentiality, however, it may be abused in tax evasions or in drug dealings.

Cryptocurrency is designed to let the individuals do freely financial dealings in P2P(peer to peer) way. Blockchain technology is a system that stores online transactional information on the block, which must be approved to be connected with an existing chain. It means the parties to a transaction exchange value with one another. Bitcoin based on Blockchain skill was invented by Nakamoto Satoshi in 2009. It realized the idea of Bit Gold and B-money and made up for faults like double expenditure[3]. Bitcoin is saved as a type of a wallet file which is given its own address, and the transactions of Bitcoin is accomplished on the basis of the address. Block is a bundle of transactional information of Bitcoin every 10 minute.

**About abstract:**

*Machine learning based on Neural Network has integrated usages in a variety of fields such as translation, finance, distribution, and medical world as well as cognition. This study shows Recurrent Neural Network Learning Model on the*

*basis of LSTM, which analyzes the previous prices of a cryptocurrency, Bitcoin and*

*predicts the next one.*

**Proposed Method:**proposed that RNN performs well in forecasting time series financial data. They predict stock markets by implementing RNN which uses embedded memory for dynamic system application[19,20]. As a result, forecasts on Bitcoinprices[21] are getting visible.

**Dataset:Kaggle**

**Project Development Modules:**

**Step 1:** Modeling that this research offers is processed in order of normalizing learning

data, separating learning data from verification data, constructing RNN model, learning

and testing, and forecasting.

**Step 2**: As shownin Figure 4,thedatais the material of Bit Coin prices drawn from

https://coinmarketcap.com[22] for 838 days from on January 1st, 2017 to on April 30th,

2019.The maximum value of Bitcoin is $19,531.55 (Dec 17, 2017) and its minimum value

is $791 (Jan. 12, 2017). With the average value of the minimum price and the maximum

one for the day dealings, the processing sets up 31 as the length of Window and learns

how to predict the price of the following day after making sure the prices for previous 30

**Step 3**: On Neural Networks the nods of hidden layers and output layers except for

those of input layers are printed out through activation function. For better prediction of

the time series data, such as stock price and bitcoin price, it is necessary to be normalized

into the range (0, 1). This research divides each value of the window by the first value and

subtracts 1 from that value. Out of the total 838 data, 807 data are available after

normalization.

**Step 4:** 807 normalized data sets for Modeling are at random divided into training data

sets and test data sets at the ratio of 9:1. 726 training data sets are partitioned again into

training data and validation data. Test data sets must not be involved in learning. As a

result, there is a separation: x\_training\_set is (726, 30, 1) and x\_test\_set is (81, 30, 1). It

means that the price of 81 days is predicted by learning 726 days of data.

**Step 5**: So as to estimate the value of Bitcoin as time passes, it is necessary that LSTM

learning model with improved Back-Proposal Through Time(BPTT) should be created

and trained. It is practicable to supply learning by using *Keras* framework, a neural

network library. Learning model consists of 2 stacked LSTM layers including 50 units

and one input layer related densely to a neuron.

**Step 6**: Fit function on *Keras*is used to learn Neural Network model. To fit the model

is to look for the weight of the model while optimizing the process with the training data

set. 1 Epoch is designed to complete a one-time study of the entire data. For example, if

epoch is 30, it means the entire data is used and learned 30 times. When epoch is too

small, underfitting takes place. On the contrary, there happens overfitting in the case of

too large epoch.

**Input of project:number of weeks to predict**

**Final output of project:bitcoin future values**

**Conclusion of project:**We build a system to forcast bitcoin price