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Artificial Neural Networks Technical Transaction for Bitcoin(BTC)

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Abstract: Bitcoin it is digital currency used for any Electronic Financial Transactions, created in 2008 by Satoshi Nakamoto as Peer-to-Peer Electronic System cash. The precise prediction of bitcoin exchange rate with respect to the US dollar is an essential matter because it effected on the world economic constancy. Meanwhile the technology that used in Bitcoin has flickered a revolution in world. This paper aim to a survy on the use artificial neural networks to predict the exchange rate of a Bitcoin(BTC) currency.

Keywords: ANN; Bitcoin; Deep Learning; Ethereum.

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1. Introduction

Bitcoin it's a first virtual currency in the world's. it is a digital coins generated and saved by number of computer as network over all the world, but this digital coins uncontrolled because not below any administration, institute or government (Aguilar-Rivera et al., 2015).

On the other hand, this digital coin called bitcoin (BTC) its managed spontaneously through using complicated cryptography algorithms called cryptocurrency for guarantee safety and legitimacy. It is created in 2008 but is still grow and develop, Bitcoin have a small unit like the actual currency called:

- Euro
- Danish Kroner, or called the gold coins

There are many differences between the Bitcoin and the actual coin or real money as follows.

Table 1. There different between the Bitcoin and the real money.

BITCOIN	REAL MONEY
Not control by any government	control by government
can't use the same cost more than once	Can use any cost at any time
irreversibility Transaction	reversibility
Buying have no Taxed	Buying have Taxed
High secure	Moderate secure compare with bitcoin
fast	moderate

1.1 History of bitcoin

In (2008) bitcoin was create in paper called "Bitcoin – A Peer to Peer Electronic Cash System" by Satoshi Nakamoto but this name it's not real name the person identity remains a unknown to this time.

In (2009), The first Bitcoin transaction record in history, the first price of bitcoin was $0.00. There is no one buy it (Weinan, Han, & Jentzen, 2017).

in (2010), Bitcoin's second year of transaction, in the start of this year the price of bitcoin worthless, then higher by $50 in March 2010 for 10,000 BTC. But this year it's the first year when somebody decided to vend theirs exchange 10,000 BTC for two pizzas.

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In (2011), This year it's more popularity because the idea of bitcoin not control currency catch, cryptocurrencies is appear as a first time. Plus there viral video published as first time which over 6.4 million views this video about bitcoin. 2011 become this year raised the level of bitcoin.

In (2012). It had started gathering care in the conventional media besides was also being accepted via businesses who had begun using bitcoin was a formula of payment. That led to 2012 the year of widespread of bitcoin. The year started with bitcoin transaction at $4 and finished through bitcoin transaction around $13[3](Nakano, Takahashi & Takahashi, 2017).

In (2013). We can safely guess that 2013 was the time bitcoin grow into the phenomenon such as we know it. Bitcoin used in a sum of financial issue , mainly in the Cypriot besides Greek crises. In March, bitcoin was exchange nearby $260, up from $13 in the end of pervious year. But in the end of year become stable in the $700 – $800 range.

In (2014).Possibly predictably for a bitcoins intended with anonymity in addition to absence of control in mind, In early 2014, the world's biggest Bitcoin interchange Mt.Gox pass away offline, and the vendors of 850,000Bitcoins not ever saw them anymore. where 850,000 bitcoins were hidden. The failure of bitcoin's biggest interchange had a thoughtful impact on bitcoin's rate. Hence, bitcoin be around with range between $300 to $400 for the most part of the year (Weinan, Han, & Jentzen, 2017).

In(2015). After the Existential Disasters year, but bitcoin still upper price it started this year from range $300s to $150 but directly bounced back. For the duration of the year, a sum of record breaking treasuries were elevated by bitcoin founded businesses. Such as the first bank that establish accepting bitcoins called British bank as type of their facilities. This led to the price of bitcoin upper at around $500.

In (2016). In this year, the Cabinet of Japan accepted computer-generated currencies similar to bitcoin as consuming as actual money. And some of places in another area of the world also accepted payments by bitcoin for equally buyers and sellers. Plus a previous there are appear of a new cryptocurrency called Ethereum known as Ether to simplify blockchain-constructed smart technology and apps. When comparing between these two digital coins we found:

Table 2. Compare Between These Two Digital Coins

PARAMETER	BITCOIN	ETHEREUM
founder	Satoshi Nakamoto	Vitalik Buterin
Announcement date	2008	2015
average block time	10 minutes	15 seconds
transactions	slower	Faster
conception	Digital currency	Smart contract
algorithm	SHA-256	Ethash
Mining	ASIC miner	GPUs

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However the begging of the year, bitcoin was transacted nearby the low $400s. But in the end of the year increase130% upper to $1,000(Kvamme et al., 2018).

In (2017). A continuing growth the areas where Bitcoin could be consumed contributed to its continuous evolution in popularity, through a period where it's value stayed below preceding peak. Many banks in the world start work with Bitcoin such as: Barclays, Deutsche and Citi bank. However; the price of bitcoin has valued a growth to 300%, nearby $4,900 and is currently transaction about $4,200.

In(2018) In 22 January 2018, South Korea gotten in a regulation that necessitates all the bitcoin buyers to reveal their identity. And start this year with $6,200 in 5 February 2018(Fukui & Takahashi, 2017)

2. How Bitcoin Work?

Bitcoin work depended on the Block Chain that define as a database containing historical accounts of all the trades that ever happened in the network. It used secure one-way hash function to any input, then creates a 32 byte as output such as Sha256 ("GOTO") = e38c772d4940e4e059430cd25b797923bfe139db8b74831e 062b409a97ca63ff

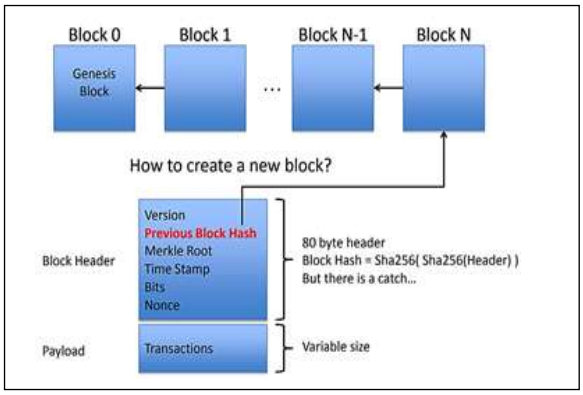

Figure 1. Block Chain of bitcoin

Bitcoin have two Keys : Public computed from a private key and Private Keys is 32 random bytes, the bitcoin consumptions Elliptic Curve cryptography .

3. Artificial Neural Networks Definition

ANN (Artificial Neural Networks) of simple processing units, these units are only arithmetic elements called neurons or nodes. It has a nervous characteristic in that it stores practical information and experiential information to make it available to the user by adjusting the weights (Fukui & Takahashi, 2017). One and only reason why the human brain is superior is its ability to process information in more than one collection of the neurons inside it at the same second in parallel, today's computers is simulating despite the rapidity called Parallel Computing. There are two types of neural network:

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3.1 Non-Deep Neural Network(Feed-forward networks) has less number of hidden layers than deep neural network . While there are studies that a non-deep neural network can fit function with a lot of parameters. Besides an input layer and an output layer is smaller than deep network.

3.2 Deep Neural Network (Feedback networks) can fit functions better with less parameters than a non-deep network.in addition to the number of hidden layers are larger than the first type (Abdalkafor & AlHamouz , 2016; Abdalkafor, 2017; Chong, Han & Park, 2017).

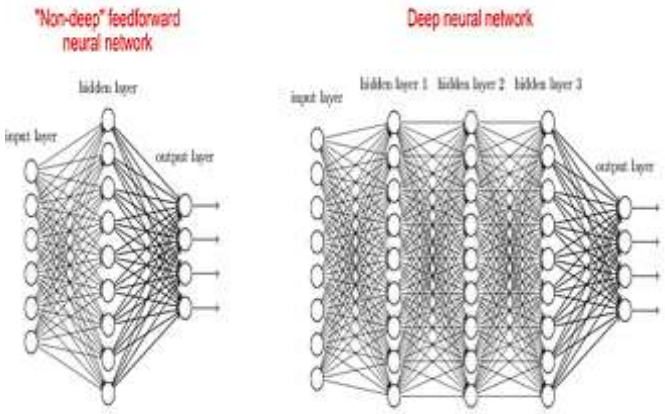

Figure (2): The types of neural network:

4. Bitcoin Transaction Constructed On Artificial Neural Networks

This research explores Bitcoin transaction constructed on artificial neural networks(ANN) for the return expectation. In specific, the deep learning technique efficaciously determines transaction signs through a seven encrusted neural network(ANN) configuration for given input information of methodological indicators, The interchange rate can be distinct as a number of entities of a assured coins that is swapped with one unit of another coin. Furthermore, the interchange rate can similarly be titled as the value of two dissimilar currencies that is obtained from the association between them. For example, the bitcoins money is the unnational currency in all world, which is powerfully associated to the dollar. The interchange rate has a in height level of importance because the unnational financial is extremely reliant on it. The confidential economic equilibrium characterizes the nearly static costs with a slight financial growing. The importance rate, financial growing and numerous supplementary factors.

5. Related Work

(Nakano et al., 2018). The purpose of this paper is to successfully discover the trading signals of the bitcoin currency through the use of the neural network by testing the previous time series of the currency every 15 minutes during the period from 2017/08/01 to 2018/01/24 .Where the results showed an improvement in the purchasing strategy of this currency.

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(Gullapalli , 2018) .The objective of this paper is to predict the daily price of the highest price and the closing price the following day to Bitcoin by using the neural network instead of the conventional method. The neural network was trained on several factors including the opening price, the highest and the lowest price and finally the closing price. A database was used by the Quandl API from September 2011 through 2018. The results of the proposed system were predicts values closer to the actual price of the Bitcoin.

(Jang &Lee,2018) .The purpose of this paper is to discover the effect of neural networks by analyzing the time series of the Bitcoin carency. The block chain information was used to train the neural network. The results showed that the neural network works well compared with other traditional methods

(Pham and Lee, 2016). The aim of this paper is to discover which users and transactions are most quasi- and have abnormal behavior by applying three algorithms (Support Vector Machine (SVM), k-means clustering and Mahalanobis distance), a database was used by a University of Illinois Urbana. This rule contains all transactions bitcoin. In this paper, the most common cases were identified for users and laboratories, including the presence of multiple addresses to a single user, as well as insufficient personal information associated with a specific user.

6. Conclusion

This paper has reviewed the effective transaction of Bitcoin, which is a different economic alternate asset through both geographies of money in addition to commodity. In individual, we have neural network (ANN) replicas for taxonomy to excerpt the meaningful trading signals. Although, the single ability investment through Bitcoin, it seems appreciated to make a multi-asset collection from numerous cryptocurrencies, which is individual of our upcoming inquiries areas.

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