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Technology of blockchain in cryptocurrency

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ABSTRACT

Blockchain technology has been associated with many applications including the cryptocurrency. Ten years ago, cryptocurrency were invented as competitor for the traditional money and banking system. The value of the so-call cryptocurrency is limited to several factors including social acceptability. In this study, we concentrated on two different types of blockchain techniques namely Ethereum and Bitcoin. The differences and features of everyone is being discussed. From the other hand, we reviewed the state of the art technology that represented by forecasting system for the cryptocurrency value.

Keywords: Blockchain, bitcoin, ethereum, random forest, neural network, regression

INTRODUCTION

Blockchain is an alternative for the traditional business and applications performable over the internet using set of computer hosts. This technology is aimed to change the concurrent concept of human daily transaction by invention of alterative more effective and cheap technology to facilitate human living hood. This technology is targeted the finical sector utmost in order to support issuing of none centralized currency called as cryptocurrency.

Several world leading technology providers such as IBM has adopted the blockchain technology. The most known folds of this blockchain are the smart contract cryptocurrency. The both are different from each other representing two applications of the blockchain technology that made to facilitate the human lives. Talking about the digital currency that being issued over the internet network and bought and sold through the same (cryptocurrency) the adaptation of this technology by the service providers is limited to the level of acceptability of the same by the users.

Blockchain is populated as trustful technology has invaded the markets and threats the future of conventional businesses. Blockchain involves various platforms such as smart contact and ledger technology as well as applications such as Ethereum and IBM Hyperledger. However, this technology is impacted by two essential considerations namely: social acceptability and back end process. From the customer point of view, involvement with blockchain in markets and business platforms may require robust legitimacy and privacy agreement where costumer investment can be protected; hence, the social acceptability of blockchain is limited by how the service providers may prove the integrity of technology. From the other hand, adaptation of blockchain in market sectors involves creating virtual (software) based platform which create another challenge represented by the cost of technology implementation. Plenty of technologies including data mining, networking, could engineering, resource management are encountered while implementation of blockchain technology. The need of robust market predictors (forecasting technology) is one of the vital demands of businesses blockchain. Existence of forecasting technology may prevent large finical losses. Analysis of customers behaviors and tendencies towards buying or selling over blockchain platform is the key solution for implementation for reliable forecasting technology. The social acceptability of this technology is strongly corelated to the information technology (IT) and intelligent systems which is incorporated with the platform. Customers feedback about the technology is most important factor that impact the social acceptability and popularity of the blockchain technology.

BITCOIN

In the last decade, markets are boomed with new invention called cryptocurrency that considered as serious competitor to traditional currencies. Bitcoin is first known cryptocurrency example which made as alternative for traditional currency as decentralized issued currency. Bitcoin is inspired by cryptographic protocols ensuring that transaction is made by the owner only and not by any other unauthorized body.

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Instead of currency central issuing organizations, cryptocurrency can be issued virtually over the network nodes and can be sold or bought through the internet using terminal computer. According to [1], bitcoin is dominating around 48% of the total cryptocurrency world. At [2], bitcoin is impacted by the market demand making its value to fluctuate from time to time. Prediction technology of bitcoin rate is vital approach for cryptocurrency platform. Prediction of the future value (exchange rate) of the bitcoin is the corner stone of many researches. Different technologies were incorporated for furcating the bitcoin exchange rate including statistical models such as autoregressive analysis. The statistical models can deal with linear problems only unlikely, bitcoin forecasting is considered and none-linear problem because the future value of the currency is impacted by many factors including the customer behaviors which is random none-linear process. In order to overcome this problem, [3] is proposed using the artificial neural network (ANN) to predict the future rate of bitcoin using the previous historical data of the bitcoin exchange rates. This paper is used the historical data including the 24 factors (features) from bitcoin official website for the period between 2011 to 2018.

Random forest algorithm is used for features selection, in order to determine the impact of each of those features on the rate of bitcoin. hence after, ANN is used to predict the future rate of the same. It was understood that features selection is performed to eliminate some features form the total 24 features dominated in the original dataset; using of principle component analysis (PCA) instead of random forest through conducting of several iterations for features section many enhance the accuracy of bitcoin exchange rate prediction.

ETHEREUM

Another form of blockchain technology that not related to the cryptocurrency is represented by Ethereum and so-called as smart contracts. This technology involves insertion of blockchain technology into other concerns alike verification of voting process, documents authentication system, etc. this technology is brought up by Buterin a 22 years old Russian developer. Ethereum is decentralized smart contract platform involves fully programmed applications with dispensed downtime and fraud activity. Ethereum as an smart contract platform is having various usages such as creating of digital trading tokens which is termed as digital currency, contribution to the crowdfunding projects by contracts creations of the participants or users and creating of voting forums where participants/users can vote on any designated issue. This multipurpose technology is considered as serious competitor of the bitcoin which may take the lead of cryptocurrency in coming future [4].

This technology is an open source platform allowing different users to share the computational power over the network and supporting technologies alike internet f things (IoT) which facilitates business requirements at lower cost. The computational power of Ether/Ethereum is represented by cumulative powers determined by each terminal computer (user) participating into the Ether network. at [5], price prediction of the Ethereum cryptocurrency is made using two different machine learning approaches namely support vector machine (SVM) and linear regression (LR).

Data of previous closing price of the Ethereum is used for training the both models, cross variation techniques is also used to provide more consistency over the training process of both models. accuracy score is being measured from both models and results shown that support vector machine is outperformed over the linear regression. SVM is scored with 96% accuracy while LR scored with 85.46 %.

Apart from the digital currency service, blockchain is realized with many other applications at [6], named data network is used as blockchain type network used over the vehicles network that carry traffic data and information. Using blockchain technology over such type of networks is facilitating the content based data delivery in which predict the importance (value) of the information in order to priories the delivery of the same to the destination node.

At [7], smart cities are evolving technology witnessing merging of plenty of information sources. However, processing of this amount of information is posing different challenges such as latency, bottleneck bandwidth, privacy and security. Block chain technology is being integrated to the internet of things (IoT) in order to facilitate the smart city data processing.

DISCUSSION

In previous sections the both Bitcoin and Ethereum technologies were discussed in terms of the usage and applications. It was realized that most researches that conducted on those interests are keen on implementation of forecasting technology where the future value of the cryptocurrency can be predicted. The state of the art is manifested by optimizing the accuracy of the prediction methods in order to gain maximum social acceptance of blockchain technology. The facts obtained from the reviewed papers can be listed as below:

a) The leading cryptocurrency is Bitcoin which is considered as first innovative digital currency made over the internet network.

b) cryptocurrency is a digital currency with decentralized issuer which can be made and exchanged through he internet network.

c) the value of cryptocurrency is restricted by the social acceptance and the market demand same like traditional currency exchanging policy.

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d) both Bitcoin and Ethereum are made to provide a digital currency facility, however Ethereum is considered as smart contract technology that provide other service alongside with digital currency.

e) in order to enhance the acceptability of any of blockchain technologies, IT systems including the furcating technologies must be integral part of the system.

f) machine learning and deep learning technologies such as random forest (RF), support vector machine (SVM), linear regression (LR), artificial neural network (ANN) are the most approaches used for prediction of cryptocurrency price depending on the previous historical data of exchange rates or other data alike economical indexes and other financial related features.

CONCLUSION

Cryptocurrency is one of the essential applications of block chain technology which involves digital currency creation and exchanging over internet network. hence, using the cryptography protocols ensures the authenticity of the cryptocurrency transaction over the network. this paper discussed Bitcoin and Ethereum as leading cryptocurrency and smart contract technologies. Bitcoin is leading digital currency that made around 48% of the total cryptocurrency market. Machine learning and deep learning technologies such as random forest (RF), support vector machine (SVM), linear regression (LR), artificial neural network (ANN) are the most approaches used for prediction of cryptocurrency price depending on the previous historical data of exchange rates or other data alike economical indexes and other financial related features.

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