Cryptocurrency Price Analysis with Artifical Intelligence

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Abstract—**Crypto currency is playing an increasingly important role in reshaping the financial system due to its growing popular appeal and merchant acceptance. While many people are making investments in Cryptocurrency, the dynamical features, uncertainty, the predictability of Cryptocurrency are still mostly unknown, which dramatically risk the investments. It is a matter to try to understand the factors that influence the value formation. In this study, we use advanced artificial intelligence frameworks of fully connected Artificial Neural Network ANN) and Long Short-Term Memory (LSTM) Recurrent Neural Network to analyses the price dynamics of Bitcoin, Ethereum, and Ripple.We find that ANN tends to rely more on long-term history while LSTM tends to rely more on short-term dynamics, which indicate the efficiency of LSTM to utilize useful information hidden in historical memory is stronger than ANN. However, given enough historical information ANN can achieve a similar accuracy, compared with LSTM. This study provides a unique demonstration that Cryptocurrency market price is predictable. However, given enough historical information ANN can achieve a similar accuracy, compared with LSTM. This study provides a unique demonstration that Cryptocurrency market price is predictable. However, the explanation of the predictability could vary depending on the nature of the involved machine-learning model.**

I. INTRODUCTION

Cryptocurrency is the peer-to-peer digital money or and payment system that exist online via a controlled algorithm. When a miner cracks an algorithm to record a block of transactions to public ledger named blockchain and the cryptocurrency is created when the block is added to the blockchain. It allows people to store and transfer through encryption protocol and distributed network. Mining is a necessary and competitive component of the cryptocurrency system. The miner with more computational power has a better chance of finding a new coin than that of less. Bitcoin is the first and one of the leading digital currencies (its mark capitalization had more than 7billionin2014,and then it increased sign if 29 billion in 2017) which was first introduced by Satoshi Nakamoto in 2008. Among many features of bitcoin, the most impressive one is decentralization that it can remove the involvement of traditional financial sectors and monetary authorities effectively due to its blockchain network features.

PROBLEM STATEMENT

Cryptocurrency is to determine how to securely store and transfer digital currency, ensure the integrity of its transactions, and provide trust and confidence to its users. Additionally, there is a need to develop a system to manage the risks associated with cryptocurrency use, such as the potential for fraud, money laundering, and other illicit activity Cryptocurrency is a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or doublespend. Cryptocurrency is used as a medium of exchange,like traditional currencies, and allows users to transfer funds directly without the need for a trusted third-party intermediary such as a bank or payment process. The scope of cryptocurrency is vast and covers many different aspects. It can be used as a form of payment, investment, and speculation. It can also be used to store value, facilitate transactions, and even create new types of financial instruments. Cryptocurrency can also be used to make transactions more secure and transparent, as well as to reduce the cost of transaction fees.

1.3 AIM AND OBJECTIVES

The main aim of cryptocurrency is to provide a secure, fast, and cost-efficient payment system that is not controlled by any single authority. It is designed to provide users with an alternative to traditional payment systems such as banks, credit cards, and money transfers. The objective of cryptocurrency is to create a decentralized, digital currency system that is not controlled by any government or organization. It is designed to provide a secure and fast way to transfer money between users in a peer-to-peer fashion. Additionally, it aims to provide users with full control over their money and transactions, and to ensure privacy and anonymity

II. LITERATURE SURVEY

Bitcoin is the world's leading cryptocurrency, allowing users to make transactions securely and anonymously over the Internet. In recent years, The Bitcoin the ecosystem has gained the attention of consumers, businesses, investors and speculators alike. While there has been significant research

done to analyze the network topology of the Bitcoin network, limited research has been performed to analyze the network's influence on overall Bitcoin price. In this paper, we investigate the predictive power of blockchain network-based features on the future price of Bitcoin. As a result of blockchain-network based feature engineering and machine learning optimization, we obtain up-down Bitcoin price movement classification. This paper aims to identify the likely determinants for cryptocurrency value formation, including for that of bitcoin. Due to Bitcoin's growing popular appeal and merchant acceptance, it has become increasingly important to try to understand the factors that influence its value formation.

Presently, the value of all bitcoins in existence represents approximately7billion,and more than 60million of notional value changes hands each day. Having grown rapidly over the past few years,there is now a developing but vibrant marketplace for bitcoin, and a recognition of digital currencies other digital currencies, but also an emergent derivatives market. As such, the ability to value bitcoin and related cryptocurrencies is becoming critical to its establishment as a legitimate financial asset. Using cross-sectional empirical data examining 66 of the most widely used cryptocurrencies,a regression model was estimated that points to three main drivers of cryptocurrency value: the level of competition in the network of producers, the rate of unit production, and the difficulty of algorithm used to "mine" for the cryptocurrency.These amount to relative differences in the cost of production of one digital currency over another at the margin, pointing to differences in relative cost of production – electricity goes in,cryptocurrency comes out. production model to determine the fair value of a bitcoin

I. METHADOLOGY

Existing System
While there is a dearth of research on cryptocurrency analysis and prediction, some studies have attempted to comprehend cryptocurrency time series and develop statistical models to replicate and forecast price movements. Even if more and more individuals are investing in cryptocurrencies, most of them are unable to benefit because they are not aware of the dynamics of cryptocurrencies or the important aspects that affect their trends

Disadvantages of Existing System
Hence, increasing people's knowledge of important variables might aid in making prudent financial decisions. Despite the complexity and difficulty of predicting the market, the movements are somewhat predictable and comprehensible.

Proposed System
Of all the aspects of bitcoin, the most remarkable is its decentralization, which is made possible by its blockchain network, which essentially eliminates the involvement of traditional financial sectors and monetary authorities. Additionally, because Bitcoin plays a crucial role in transactions as a trust intermediary, its electronic payment system is based on cryptographic proof rather than mutual confidence. This can be applied widely in real-world scenarios, such as tracking charitable contributions to prevent corruption.

Advantages Of Proposed System
By utilizing this technology, the controllable anonymity scheme created by Bitcoin improves users'safety and

anonymity. For example, we may leverage the blockchain's property to create identification cards that not only secure our privacy but also authenticate our identity.

System Architecture
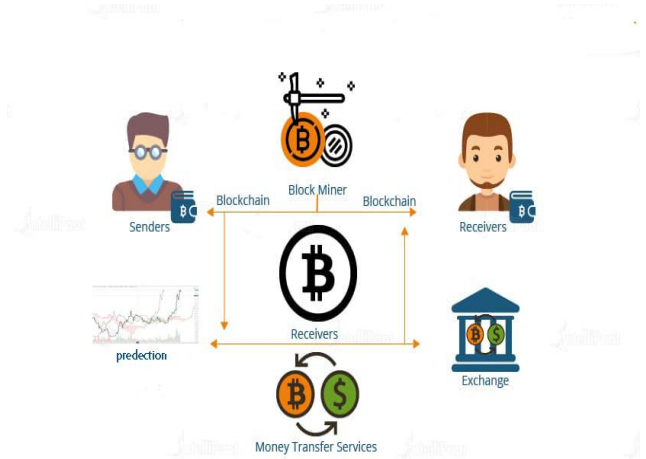
System Testing
The goal of testing is to find mistakes. The goal of testing is to find every potential flaw or vulnerability in a work product. It offers a means of testing the functionality of individual parts,
assemblies, subassemblies, and/or final products. It is the process of testing software to make sure it satisfies user expectations and needs and doesn't malfunction in a way that would be unacceptable.Different test kinds exist. Every test type responds to a certain testing need.

I. IMPLEMENTATION

Describe Python.
• Python is an open-source, high-level, structured programming language that is useful for a broad range of activities. Python is an interpreted programming language that, before to execution, is automatically compiled into bytecode.
• It is also a dynamically typed language with object-oriented features included, though not necessary to utilize them.Python is the standard scripting language for NASA's Integrated Planning System and is utilized by NASA for its software systems. Python is also widely used by Yahoo! for discussion group management, and by Google for many of the Web Crawler and Search Engine components.
History Of Python:
The creator of Python is Guido Van Rossum.
The late 1980s saw the start of the design, which was initially made public in February 1991. Why Python, the name? Nope. It was not given the name of a poisonous snake. Rossum enjoyed watching a comedy series in the late 1970s. The same television show, Monty Python's Flying Circus, is where the term Python originated. History of Python Versions Beginning of implementation: December 1989 1990 internal releases.

Implementation Workflow:
Python lets you enjoy programming by letting you concentrate on the solution rather than the syntax. It's a wise decision to begin your Python experience as a novice.
2. Open-source and free Python is freely used and distributed, even for business purposes. You can alter the Python source

code in addition to using and distributing programs developed in it. A sizable community is always working to make Python better with each new version.

3. Mobility Python scripts can be run and moved between platforms without requiring any modifications.It functions flawlessly on nearly every operating system, including Linux, MacOS, and Windows.

4. Broad and Adaptable

Let's say a high performance is required for an application. Python code can be combined with segments of C/C++ or other languages with ease. This will enable scripting features for your application that other languages might not offer right out of the box, along with good performance.

5. An advanced, interpreted tongue You don't have to bother about difficult jobs like garbage collection and memory management, unlike C/C++.Similarly, Python automatically translates your code into a language that your machine can comprehend when you run it. Lower-level operations are not a concern for you.

6. Big standard libraries to handle everyday problems Programmers' lives are made much easier by Python's many standard libraries, which eliminate the need for you to create all the code yourself. For instance: Do you need to join a Web server's MySQL database? Use import MySQL db to access the MySQL dB library.

User login Page
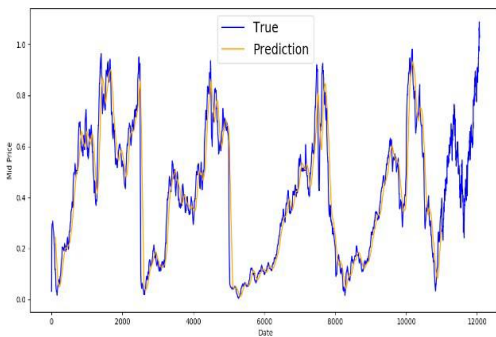
True pridections

i. CONCLUSION

Bitcoin and other cryptocurrencies have made a name for themselves as the front-runners of decentralization. Many cryptocurrencies, including Ethereum and Ripple, emerged following Bitcoin. Many people retain them as a tool of speculating due to the high degree of price uncertainty.

Understanding the internal workings and predictability of those cryptocurrencies is so crucial. In this work, we examine and forecast the price dynamics of Bitcoin, Ethereum, and Ripple using two different artificial intelligence frameworks: fully-connected Artificial Neural Network (ANN) and Long-Short-Term-Memory (LSTM). Even though the internal structures of the ANN and LSTM models differ, we demonstrated that they are comparable and both perform rather well in price prediction. Next, we examine the impact of past memory on the prediction of the model in more detail. We discover that LSTM relies more on short-term dynamics than ANN does, indicating that LSTM is more effective than ANN at utilizing valuable information that is hidden in historical memory. But when compared to LSTM, ANN can attain a similar level of accuracy if sufficient historical data is available. This study offers a distinctive proof that the price of cryptocurrencies is predictable. Nevertheless, the nature of the underlying machine-learning model may influence the explanation of the predictability.

i. REFERENCES

1. Greaves, A., Au, B. (2015). Using the bitcoin transaction graph to predict the price of bitcoin. No Data.

2. Hayes, A. S. (2017). Cryptocurrency value formation: An empirical study leading to a cost of production model for valuing bitcoin. Telematics and Informatics, 34(7), 1308- 1321.

3. Shah, D., Zhang, K. (2014, September). Bayesian regression and Bitcoin. In Communication, Control, and Computing (Allerton), 2014 52nd Annual Allerton Conference on (pp. 409-414).IEEE.

4. Indra N I, Yassin I M, Zabidi A, Rizman Z I. Non-linear autoregressive with exogenous input (mrx) bitcoin price prediction model using so optimized parameters and moving average technical indicators. J.Fundam. Appl. Sci., 2017, 9(3S), 791- 808.

5. Adebiyi AA, Ayo C K, Adebiyi MO, Otokiti SO. Stock price prediction using a neural network with hybridized market indicators. Journal of Emerging Trends in Computing and Information