

Artificial Intelligence Driven Crypto Currencies

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ABSTRACT

Artificial intelligence-driven cryptocurrencies are cryptocurrencies created by Artificial intelligence using the traditional human cryptocurrency development framework without human intervention. An AI explores the data from each different stream and arriving at the framework which can host these cryptocurrencies following the standards of legality. Cryptography is the encryption of specific data to conceal it and keep it a secret from unwanted third parties. Cryptocurrencies are encrypted currencies with unique keys as developed by developers. Artificial intelligence is an advanced machine programmed to simulate and emulate human intelligence by carrying tasks and reaching conclusions with little or no human intervention. This work considered the use of AI through machine learning and deep learning in the development of cryptocurrencies. The AI machine will set all the parameters and structure of the cryptocurrency. This will include how data is added, removed, and verified on the stream. Blockchain is an open ledger of a cryptocurrency's transactions. It stores files in the system, arranged in blocks, and connected on a list called chains. The article considers how AI-driven cryptocurrency will run using the blockchain network and its impact on it. Artificial intelligence and cryptocurrency are technological very essential technological development currently. The effect of the combination of both technologies would be enormous in the future as both technologies will develop each other remarkably.

Key Words: Cryptocurrency, Cryptography, Artificial Intelligence, Data Encryption, Deep Learning, Blockchain, Bitcoin

INTRODUCTION

Cryptocurrency and Artificial Intelligence (AI) are part of our modern world's most trending technological advancements. Cryptocurrency and AI are quite different in developing, use, applications, and parties using them. Researchers have been going, and there have discussions on ways to combine both of them for the best outcome.

Currently, cryptocurrency and Artificial Intelligence are seen as innovations that would tremendously impact and improve the ways things are done in so many areas of life and diverse industries (Vadlamudi, 2018). Cryptocurrency, for example, can improve security, the privacy of transactions, and so on. Also, AI, through machine learning, can detect patterns and optimize results. The connection between AI and cryptocurrency has been in some ways neglected and separated (Ganapathy, 2019; Donepudi, 2020).

CRYPTOCURRENCY

Cryptocurrency has become quite popular on the internet and various social media platforms. Cryptocurrencies are digital encrypted money (currency). They can be exchanged for value. Just like normal Fiat currencies, cryptos can be used for payments of goods and services. They can also be traded and stored as a form of investment (Paruchuri, 2017).

The idea of cryptocurrencies came up first in the 1980s. David Chaum first attempted to create electronic money Called Ecash. However, the idea failed at that time. In 2008; Satoshi Nakamoto created another cryptocurrency, Bitcoin. Bitcoin is currently the most successful cryptocurrency. Satoshi made improvements on the earlier works of David Chaum. Bitcoin used peer-to-peer sharing systems instead of the main server like Ecash (Paruchuri, 2018). This meant files are transferred or shared instead of downloading from a single server. It was possible to use blockchain technology.



Figure 1: Cryptocurrencies (Source: economictimes.indiatimes.com)

BLOCK CHAIN

The name is gotten from the way records and files in the system are arranged in the blockchain single records called blocks connected on a list referred to as chains. Blockchain networks are open to the public. They can read through the data. However, alterations and updates can only be carried out by owners (Vadlamudi, 2016). Blockchain is the platform on where most cryptocurrencies are based on. Blockchain is a unique type of database which allows the existence of most cryptocurrencies such as Bitcoin. It keeps records of transactions like a peer-to-peer public ledger from cryptocurrency transactions (Paruchuri, 2015).



Figure 2: Blockchain (Source: blogs.iadb.org)

CRYPTOCURRENCY DEVELOPMENT

'Cryptocurrency' comes from combining cryptography with currency. However, unlike the currency, cryptography may be a relatively new and complex term for some persons. It is important to understand what cryptography is briefly before going into cryptocurrency development (Vadlamudi, 2015).

Cryptography mainly involves the encryption of particular data or information to keep it a secret and outside the grasp of enemies or third parties. For instance, it was used during wars; encrypted messages are used to deliver messages to avoid leaks to enemies. In the computer world, which runs on constant input and output of data, the need to prevent compromise of sensitive data is essential. Compromise of sensitive data can lead to a security breach. In cryptocurrency, cryptography is employed mainly for three (3) purposes;

- Security of transactions
- Creation of additional blocks
- Verification of asset transfer

The above purposes are achieved using public-key cryptography, enabling a user to have a public and private key. The key is a combination of letters and numbers.

Currently, cryptocurrency developers build a currency system to start with a lead and go with the accounting of those leads and provide how much data to be mined overall in that data. That is, cryptocurrency developers, at the point of engineering and developing a currency, chose the number of cryptocurrencies that will be released, provide a means to account for the total circulating supply of the crypto, and also the overall data that can be mined.

For instance, the total supply of bitcoin is pegged at 21million Bitcoin, and the circulating supply is 18million bitcoin. To get more Bitcoin, users would have to mine.

Mining cryptocurrencies like Bitcoin and litecoin is similar to real-world gold mining. It is the extraction of crypto from the system using computational means. Cryptocurrency developers develop and build the cryptocurrency frameworks and system which determines how the cryptocurrency system operates, the programming, and so on. The vision for a particular cryptocurrency is set through the developers. Crypto developers have a wide knowledge of cryptocurrency programming, development, and cryptosystems, and they apply this principle to cryptocurrency development. In applying the principles to building a cryptocurrency, the developers design the framework and structure of the crypto.

New cryptocurrencies are built and developed by creating a whole new blockchain or through forking an already existing blockchain to create a token (Donepudi, 2019). Creating a cryptocurrency requires basic coding skills and great knowledge of blockchain.

CLASSES OF CRYPTOCURRENCIES

Bitcoin

Satoshi Nakamoto created it. However, seen as many as the father of cryptocurrencies. Bitcoin is not the first cryptocurrency to exist. It was created in 2008 and became popular in 2009. It is seen as the most successful cryptocurrency. Based on blockchain technology which allowed for a secured decentralized network that uses end-to-end encryption from transactions.



Figure 3: Bitcoin (Source: www.foxbusiness.com)

Altcoin

Altcoins is shortened from 'alternative coins.' They are an alternative to bitcoin. They sprung up following Bitcoin's success. Most developers have tried to make coins to follow in the footsteps of Bitcoin. Some solve particular problems associated with Bitcoin use (Donepudi, 2018). Over four thousand altcoins exist. Major altcoins are Ethereum, litecoin, stellar, dogecoin, BNB, Monero, Dash, Cardano, etc.



Figure 4: Altcoins (Source: news.bitcoin.com)

Stablecoin

Stablecoins are created for asset stability. The cryptocurrency market is majorly unstable and highly volatile. Stablecoins were created as a means of storing value in the cryptocurrency world. As the prices of major cryptocurrencies fluctuate now and then, it becomes almost impossible to manage. The value of Stablecoins are tethered to one currency or multiple currencies and placed in reserve to maintain value. Examples of Stablecoins are Tether (USDT) and Binance USD (BUSD).



Figure 5: Stablecoin (Source: mintdice.com)

WAYS TO DEVELOP A CRYPTOCURRENCY

Creating a coin

This is easy to create a crypto coin. It is also fast. Very experienced and professional developers in blockchain and decentralized technology are needed in creating a coin.

This process is quick and easy as developers could just copy, alter, add or remove a code of Bitcoin. Doing this would create a new coin. Knowledge of the code and how changing it affects it. The budget would be allocated towards creating and support the new blockchain.

Creating a token

Creating a crypto coin gives total control of the blockchain. This comes with its advantages and disadvantages, such as huge spending, time and so on. Tokens are forked cryptocurrencies created on the platform of an already existing blockchain. The token relies on the trust and popularity of the platform to start. Tokens are less expensive and save time because an already existing platform is used instead of a fresh one.

There are several ways to development to a cryptocurrency. A step by step process in developing cryptocurrency in the simplest terms include;

Step 1. Choose a model

In creating your cryptocurrency, you will have to consider a mechanism that decides the legitimacy of any transaction. Protocols are called consensus mechanisms to check transactions to determine the legitimacy of transactions and add them to the blockchain.

Step 2. Chose a platform

The consensus mechanism determines the right choice of blockchain for your cryptocurrency. There several blockchain networks available.

Step 3. Style the Nodes

After deciding how your blockchain will work and the functionality of the blockchain, the Nodes will be designed accordingly. E.g., whether the keys will be private or public, whether to use the cloud, on-premises, or both for hosting, and so on.

Step 4. Develop an internal framework of the blockchain

You must consider all aspects and components and be certain about them before launch. Some of the parameters of the blockchain may be unchangeable after launch.

Step 5. APIs integration

Several platforms may not provide APIs. However, this is quite important.

Step 6. Developing the interface

The cryptocurrency interface is as important as the interface. A bad interface makes the cryptocurrency bad. There is a need to make sure that external databases are updated along with the FTP and web servers.

Step 7. Following the standard of legality

There are certain standards of legality that a cryptocurrency must follow. This standard will soon be inculcated into the international cryptocurrency regulations law. Developers should try to follow the set standard before it becomes compulsory.

ARTIFICIAL INTELLIGENCE

Machines through technology advancement can be programmed to simulate human intelligence. They are programmed to mimic human actions and think like humans as well. This would enable them to carry out human jobs. Artificial Intelligence has been used to refer to machines that show human-like behavior. E.g., a machine that not only processes data based on its initial programming but can also learn from input and output of data to enable it to solve problems. An important feature of AI is its ability to process data like a thinking man and take the best possible action towards a particular objective.

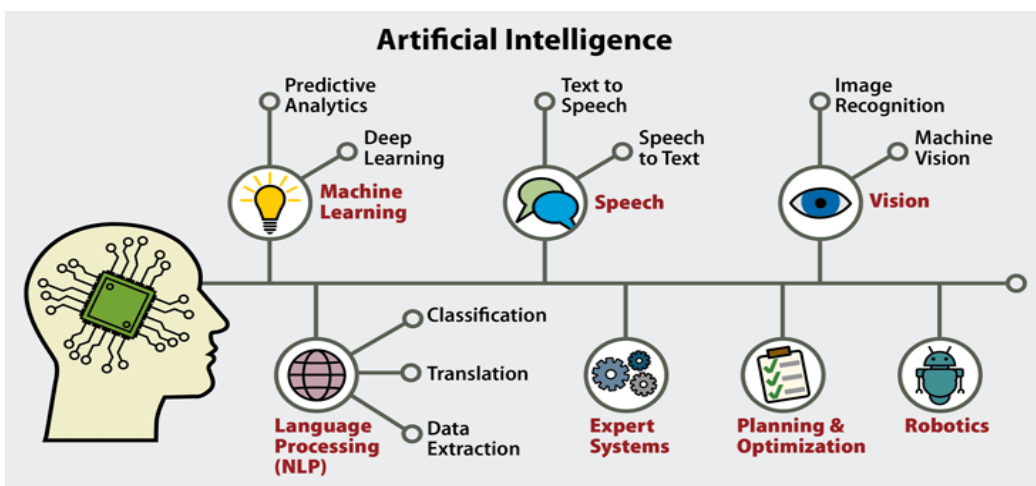


Figure 6: AI (Source: www.datamation.com)

Machine learning is part of artificial intelligence components where machines can learn automatically from input and output data and find a way to adapt to new data. Machine learning brings AI machines to a point where they no longer need human interference. A subset of machine learning, deep learning copies the working pattern of the human brain. It processes the data and creates patterns for actions. Deep learning in AI, the system gathers data and learns about the data automatically without human assistance. These data are maybe random or already in patterns. Deep learning is also called Deep Neural Network (DNN).

Using AI has pushed the boundaries of machine functionalities. Some advantages of using Artificial intelligence generally include:

Reduces Error by humans: From time to time, humans make mistakes. “Human Error” a phrase that came about as a result of human mistakes over time. With the right programming and commands, computers, systems, and machines do not make human-like mistakes. AI gathers data and information by applying particular algorithms and making decisions based on them. This way, mistakes, and errors are reduced significantly with a higher level of precision and accuracy. For instance, the use of AI in weather forecasting has increased the accuracy of forecasts and reduced human error.

Reduces the need for humans to take risks: Artificial intelligence machines can be programmed to carry out various types of jobs. They can be programmed to handle tasks that are risky. It is a huge advantage as this can save human life. For instance, AI robots can be programmed to defuse a bomb, explore highly dangerous places like Mars and the deepest parts of the oceans, and so on.

Availability: Machines can work for more hours than humans. An average human may for a maximum of 6hrs per day aside from the breaks. Humans need to take time out for rest and to refresh themselves and prepare for a new workday. AI can be used to manage machines maximize working hours. Machines can work 24/7 and do not take breaks like humans. For instance, AI has been used by websites, educational institutions, and customer service centers to help solve customers’ issues and queries.

Helping in reoccurring jobs: There are so many reoccurring jobs that humans do liking emailing, document verification, checking for errors, and so on. This task could be automated using AI and free human time for humans to engage in other less boring jobs.

Quicker decisions: AI, through Algorithms and other technological networks, can make decisions quicker than an average human being. Humans will need to conduct research and analysis before taking several things into consideration to reach a decision. Also, the emotional and bias aspects will also be considered. Artificial intelligence machines work solely through their programming and reach conclusions and results without bias or emotions. For instance, games like chess-powered AI are almost impossible to beat because of the AI. It makes the best-calculated move in a short time as programmed by the Algorithms.

Innovations: Artificial intelligence is enabling so many innovations in almost every aspect of life. It will help solve the majority of very complex issues. For instance, artificial intelligence has been used to predict breast cancer at the earliest stages.

SOME OF THE DRAWBACKS TO THE USE OF AI INCLUDE

Expensive to create

Artificial intelligence is a highly complex machine; this makes it highly expensive to create and costs a huge amount to make. Aside from creating an AI, machines require maintenance

from time to time. Maintenance like installing new software updates to prevent security breaches and repairing in case of faults is usually needed. This will usually cost some more.

It makes humans lazy

Artificial intelligence, as a result of its ability to automate and reduce human workload, has made many humans lazy. Many people have passed on their Jobs to an AI to carry out. More tasks would be passed on to automated machines by humans as we tend to get addicted to innovations that can solve problems and reduced the workload (Ganapathy, 2017). This may cause problems for future generations.

Job loss

As more AI is invented to handle tasks usually handled by humans, the need for human personnel reduces significantly. AI will replace the majority of the reoccurring, and few humans may be needed for only monitoring. Also, many organizations are open to replacing human personnel with automated machines that can handle the same task efficiently. In the long run, it would leave many unemployed and make organizations more dependent on machines (Donepudi et al., 2020).

Lacks emotions

Emotions, in a way, bring about team connection. Artificial intelligence cannot have emotions for that connection even though they perform tasks more efficiently than humans.

No thinking outside the box

Artificial intelligence performs based on its programming and algorithms. This means that they don't do anything outside their programming or the scripts. They might crash when they try to carry out an unknown operation. There are good sides and bad sides to every invention. AI, like other inventions, has both. It is the job of whoever wants to use and AI to decide whether or not to go on with the use by weighing the opportunities presented and the drawbacks.

AI IN CRYPTOCURRENCY FRAMEWORK/SYSTEM DEVELOPMENT

Developing a system involves defining, structuring, testing, and implementing a new software program. It involves developing designed structures and systems, the making of storage and database, or the use of already developed software by a third party.

In developing a new system, attention must be paid to producing high-quality systems that can meet users' demands and needs. A developer will need to make scalable systems.

There are advanced phases that are essential for developers to follow. Stages such as:

- Planning
- Analysis
- Design
- Implementation.

Developers design systems to meet the set goals of the company for users. They conduct a preliminary analysis to determine the cost, expenses, time needed, and so on. After the preliminary analysis, the system analysis is then carried out. It defines the requirements and sets the goals for the project. The developers then move to design the systems and describe the attributes and how the system is to operate. The next is the actual development. Real

scripts and codes are written with instructions and commands to determine the operations. In bringing all the pieces together, they integrate and test them. The final stage of the startup development stage is the acceptance by the owner and installation. After the installation, the system is assessed efficiently, and maintenance is carried out. The developed entire software is evaluated properly.

Systems, networks, databases, and computers run on data and information. This makes the need to secure and protect the system data very important. Developers input security measures at every layer of software development, from start to finish of the system development.

Cryptocurrency developers follow this technique in developing frameworks on the blockchain network. They determine the extent to which the cryptocurrency can be fixing the total available, the maximum that can be mined in building a cryptocurrency frame and system.

In our world today, the use of technology has become a norm in almost every aspect of life. Artificial intelligence continues to support human software developers at all stages of the development lifecycle. As noted earlier, Artificial intelligence is an advancement in technology, where machines are programmed to simulate human intelligence. Artificial intelligence-enabled machines mimic human intelligence by performing human jobs and tasks without human interference. This is possible through machine learning (DNN).

A programmed AI machine can mimic the process of creating a new cryptocurrency. Here, the AI machine gathers data from different streams and arrives at a framework to host the cryptocurrency. This is done following the standard of legality by performing complex and intelligent tasks common with human thinking. AI-driven cryptocurrency would be no different from the normal human-developed crypto. The only difference is that AI cryptocurrencies will be developed AI-enabled systems with human inference while the human-developed cryptocurrencies are made using manual means by humans.

In making the framework for cryptocurrencies, the AI will determine attributes and limits of the cryptocurrency just like human cryptocurrency developers do by gathering and analyzing crypto-related data from numerous sources and automating the writing of scripts, codes, and programs for processes. This is to ensure the provision of accurate codes that would lead to more efficient and advanced cryptocurrency.

Using deep and multiple layers to extract and place cryptographic data in the blockchain network, an AI could create a cryptocurrency without human assistance.

The majority of cryptocurrencies function on the blockchain system. Cryptocurrency and Artificial Intelligence are both advanced technological development; they have their own separate level of complexities. However, they both can work hand in hand to benefit each other in the world of technology, and in this age of machines—the impact of both technology on data processing and analysis huge. The combination of artificial intelligence to cryptocurrency and blockchain development would increase data exploitation and take it to greater heights. Integrating machine learning through Artificial intelligence into cryptocurrency development systems can help enhance the framework of blockchain and increase scalability.

Artificial Intelligence can also increase blockchain efficiency easily with greater effects than humans. The following are ways in which AI can impact cryptocurrency development:

Intelligent computing power

Operating a blockchain System requires a significant amount of computing power. This is due to a large amount of encrypted data on the system. For instance, the hashing algorithms used in mining Bitcoin blocks utilize a “brute force” method. This method involves enumerating all possible options for the answer systematically and detecting if the candidate solved the problem before validating the transaction. AI-driven cryptocurrency would allow a shift from this method and handle the task more smartly and efficiently. Picture an Artificial intelligence-based cryptocurrency development Algorithm that will use machine learning to design its ability in ‘real-time’

Multiple data sets creation

The blockchain system operates a decentralized and open network that can be used by the public from anywhere in work, unlike other AI based-projects. As seen earlier, blockchain technology is now used by several industries to make a decentralized system. Some of these industries have also tried to develop a blockchain-based AI technology that can help broaden data and algorithm sharing. The combination of artificial intelligence with a blockchain network will create a smarter decentralized blockchain network that will host numerous sets of data. By using AI on the blockchain network, it would create an API on the blockchain. This would make intercommunication possible for AI agents (Neogy & Paruchuri, 2014). With this, different algorithms for new cryptocurrencies can be built using different data sets.

Security of data

AI functions completely on the input and output of data. AI receives data and information on the happenings around the world through data input. Machine learning occurs when data is put into the AI continuously. It allows for the automated development of AI without human programming. On the other hand, Blockchain mainly allows for storing of data in an encrypted form on a distributed record. It allows for the development of highly secured databases that are open to only parties with approval to look into them. The result of a combination of the two systems is a backed-up system for highly sensitive and valuable data. Cryptocurrency development driven by AI will offer a more secured blockchain database and a management system for large data. An AI can access the stored cryptocurrency data on the blockchain only by having the right permission and using the proper procedures.

Confidence in Artificial Intelligence decisions

Through machine learning, AI algorithms become smarter. It would become difficult for even its programmers to understand why and how some results and decisions were made as it grows smarter. This is a result of the fact that AI can process huge amounts of data and variables. Blockchain enables a large number of records of data, variables, and processes that are utilized by artificial intelligence (Vadlamudi, 2017). This makes it a lot easier to audit the cryptocurrency development process. With the right blockchain algorithm, the entire steps from data entry to the finalization can be monitored, and the monitoring party will make sure that the data was not tampered with. The use of AI in developing cryptocurrency is largely an undiscovered area. However, there have articles that have discussed a means for the combination of the two. This combination can result in technological advancements that have not been thought of even. It could enhance both Artificial intelligence and the blockchain network as both technologies work on the input and output of data. The use of AI coding tools makes cryptocurrency development advanced and better. Cryptocurrency developers become relieved from the task of examining files with bugs and errors. AI can easily find the bugs and correct errors instantly.

Developing better cryptocurrency software with advanced decision-making

According to an analyst, Diego Lo Giudice-

“Software developers will be able to build software faster, using AI technologies such as advanced Machine learning (ML) deep learning, natural language processing, and business rules.”

AI, through machine learning, is enabled to learn and develop from data input and output. Artificial intelligence in cryptocurrency development does not only make it easier but also makes the cryptocurrency better.

CONCLUSION

The use of machines and technology has become a norm in human life today. This makes it necessary for more technologies to solve more human problems and carry the human task. Aside from the development of more machines, existing machines can also be developed to become more efficient.

Artificial intelligence and cryptocurrency are currently part of the most trending technologies today. Artificial intelligence allows machines to emulate and simulate human intelligence through data gathering and processing. This means that AIs can be programmed to carry out any function, including developing software like cryptocurrencies on the blockchain network. Using Artificial intelligence to develop cryptocurrencies allows for an efficient way to establish cryptocurrencies without human assistance. Combining AI and cryptocurrency will create tremendous advancement in the technology world.

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