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A STUDY ON IMPACT OF ARTIFICIALINTELLIGENCE IN E-COMMERCE & BLOCK CHAIN AND APPLICATIONS

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Abstract

Artificial intelligence is a method of causing a computer-controlled robot or piece of software to think critically, much like a wise person might. The impact of artificial intelligence on e-commerce is the main topic of the study. E-commerce is currently utilising a variety of technologies to spot trends in the online purchase and sale of goods and services, as well as the data and money transfers required to complete these transactions. The conclusion and recommendation that software using artificial intelligence can produce and forecast the E-Commerce accurately.

BlockChain and artificial intelligence are now well-known and revolutionary technology. For learning, planning, autonomous computing, optimization, knowledge discovery, perception, search, and reasoning, AI algorithms are utilised.

As a distributed point-to-point system, Blockchain, on the other hand, offers a secure and verifiable mechanism for decentralised transaction validation. In this essay, we examine the nexus between blockchain and artificial intelligence in more detail. Before exploring the practicality of combining the two technologies, we first go through the areas of AI as well as the idea, traits, and key technologies of blockchain. The research on the interaction between blockchain and AI is then described. A lot of people could gain from the combination of AI with blockchain if it has a big impact on domains like the Internet of Things, identity, financial markets, democratic governance, smart cities, local communities, supply chains, personalised medicine, and others. This paper highlights the impact of artificial intelligence in e-commerce and BlockChain.

Keywords: Artificial Intelligence, E-commerce, Buying and Selling of Goods, BlockChain, Machine Learning, Deep Learning, Internet of Things.

Introduction

You lose competitive advantage every day that your team puts off implementing cutting-edge AI-powered solutions in your content marketing. Great if this came off as a little theatrical. Your marketing team should be on alert and ready to accept AI-powered marketing solutions as a result of this. Artificially intelligent systems are always at work behind the scenes of well-known goods and services like Netflix, Amazon, Flipkat, and, of course, Google. But during the last few years, AI has forged a deeper path into marketing, aiding firms in improving each stage of the consumer journey. Additionally, medium- and small-sized firms can now buy and utilise solutions that were previously only available to enterprises. to better comprehend the most recent marketing uses of machine learning. Machine learning has a wide range of uses in marketing by monitoring and analysing data

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with the aim of increasing client interaction. 1. Predict customer lifetime value, 2. Predict customer churn, 3. Improving the customer journey, 4. Lead scoring, 5. Personalization, 6. Product recommendations, 7. Dynamic pricing, 8. Ad targeting.

AI algorithms depend on data or information to learn, infer, and draw firm conclusions. Blockchain is a distributed ledger that enables data to be stored and traded in a way that has been approved by all mining nodes and has been cryptographically signed and verified. The outcomes may be trusted and left alone when smart contracts are used to perform analytics utilising machine learning algorithms. For the extremely sensitive data that AI-driven systems must obtain, store, and use, blockchain and AI can be integrated to create a secure, irreversible, decentralised system. Major data and information security advancements are made as a result of this strategy in many different fields, including those involving medical, personal, banking and financial, trade, and legal data. Using AI and blockchain technology, decentralised AI apps and algorithms can be created with access to the same secure, trustworthy, shared platform of data, logs, knowledge, and options. Such a platform can also be used to retain a reliable audit trail of every recording made by AI algorithms prior to, during, and after the learning and decision-making process. Without relying on a centralised authority, decentralised AI enables the processing and decision-making of shared data that has been digitally signed, authenticated, and secured throughout transactions and storage on the blockchain. Without the use of Trusted Third Parties or middlemen, decentralised AI enables distributed and decentralised processing and decision-making on shared data that has been digitally signed, trusted, and kept secure on the blockchain. The ability of AI to work with massive volumes of data has been recognised, and blockchain has emerged as a safe platform for storing this data. A little study has been done on fusing blockchain and AI.

Two Types of Artificial Intelligence

1. Weak AI.
2. Strong AI.

In the case of weak artificial intelligence, machines mimic intelligent human behaviour. Weakly intelligent machines are capable of thinking, moving, and communicating, but they are programmed to do so. The chess playing computer lacks the ability to think like a person does, yet it can play the game. In order to compete with human players, the machine is designed to play chess and make deft moves.

When artificial intelligence is strong, machines actually have human-like abilities. It is predicated on the idea that computers can be programmed similarly to the human brain. They have the capacity to reason, choose, and form opinions and beliefs.

Intelligent Marketers use Artificial Intelligence

1. AI-enhanced PPC advertising
2. Highly personalized website experience and better CRO
3. AI-powered content creation
4. Content-creation chat bots

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Applications of Artificial Intelligence (Ai)

Numerous areas have seen the application of AI. The examples that follow,

1) Gaming: Thanks to artificial intelligence, machines can now compete against people in games. Numerous strategic games, like poker, chess, tic-tac-toe, etc., use AI. Machines now have the capacity to consider a wide range of possibilities using heuristic knowledge. IBM's first chess-playing computer, Deep Blue, was created.
2) Banking: AI has applications for countering money laundering (AML). To expand their illicit wealth, money launderers conceal their activities. This unlawful activity is so meticulously documented that it appears as though the money was gained legally. The global banking sector is switching from conventional AML detection to systems based on artificial intelligence.
3) Expert Systems: Using artificial intelligence, expert systems were created to address complicated issues in a given field. Expert systems are designed to give advice, forecast outcomes, offer other solutions, and support human decision-making.
4) Healthcare: The use of AI in healthcare includes automating drug discovery, treating diabetic retinopathy, and diagnosing illnesses.
5) Vision Systems: Computers using vision systems can recognise, decipher, and comprehend visual information.\
6) Services for music and movie recommendations: AI-based apps like Spotify, Pandora, and Netflix make music and movie recommendations based on user preferences and interests. The AI learning algorithm then uses the gathered data to make recommendations.
7) Handwriting Recognition: Text written on paper or displayed on a screen is used by handwriting recognition software to gather data. The text is then turned to editable text once this software recognises the pattern in handwriting, such as letter forms.
8) Robots having embedded sensors, such as those for sound, vibration, pressure, heat, light, and temperature, can detect physical data and carry out commands from a person. To make wise judgements and demonstrate intelligence, they have powerful processors and lots of memory.

Objectives of the Study

1. To understand the present status of e-commerce
2. To study the impact of artificial intelligence in e-commerce

Scope of the Study

The goal of the research is to determine how artificial intelligence is affecting e-commerce. Sincere efforts have been made to cover every area of the study. For this reason, an investigation of artificial intelligence's current effects on e-commerce is necessary.

Research Methodology

The study's goal is to examine how artificial intelligence is used in e-commerce. Both primary and secondary data are used with the data. Questionnaires were employed as the research instrument in this study. It was created with the study's impact in mind. Simple percentage methods are applied with data. The convenience sampling approach is used to choose the sampling unit for the investigation. The study's chosen research methodology is the practical research. 25 respondents made up the study's sample size.

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Primary Data

Primary data are ones that are gathered fresh and for the first time, making them unique in character. Primary data were acquired by visiting the industrial premises and various divisions within it. The information was gathered from the manufacturing workers using both the questionnaire method and the interview method. If an employee wasn't interested, didn't have time, or was hesitant about it, I would still ask them for information.

Secondary Data

It is gathered from the company's internal records, including library books, trade publications, transcripts of prior training sessions, and responses to those sessions, etc. It is also carried out by representatives of the factory's pursued department. Numerous periodicals, tools, and other references were also very significant in this study. Secondary data offers a better perspective on the issue.

Blockchain:

The decentralised, autonomous, robust, verifiable, fault-tolerant, integrity, confidentiality, traceability, and transparency of blockchain technology make it desirable. Blockchain joins other disruptive technologies like big data, the Internet of Things, intelligent personal assistants, and autonomous vehicles in offering tremendous potential as well as the potential for unintended social repercussions as the technology develops and our understanding of its applications expands. To track the transfer of digital "tokens" or "coins" like Bitcoin and other cryptocurrencies, blockchain was initially developed as a ledger system. A system for identifying the owners of these tokens and currencies was necessary. Blockchain emerged from the need to create a digital ownership record. Blockchain aims to supplement the existing internet of information with the internet of value that we are creating for the future. Bitcoin, Ethereum, Dash, Litecoin, Zcash, Zcoin, Ripple, Blackcoin, Qtum, BitConnect, Komodo, Dogecoin, Ark, Byteball, Naivecoin, and RScoin are a few examples of cryptocurrencies.

The US Department of Defense (DARPA - DoD) and NATO's C4ISR have already started their own blockchain initiatives, building SBIR 2016.2[35], a secure, decentralised messaging tool for the military. Blockchain technology has garnered interest from a wide range of stakeholders from a number of sectors, including healthcare, banking, real estate, utilities, and government. There are other initiatives presently in development that will affect how health care data is handled, as well as our supply chains, property titles, and online identities. The authors identify five upcoming blockchain-related research streams for marketing: Electronic commerce, marketing, data, data analytics, privacy, and security are all related to business..

Integration of AI and Blockchain:

Combining BC with AI opens up a wide range of possibilities because it brings together two of the most cutting-edge technology. Artificially intelligent blockchain is used in autonomous vehicles and smart city transportation. Blockchain and AI working together can improve machine learning and give AI financial goods. A safe solution for authentication is offered by the blockchain [22]. On the one side, blockchain has issues with efficiency, scalability, and security. On the other hand, there are a number of privacy, explainability, and trustworthiness problems with AI.

Blockchain for AI:

Blockchain will help AI decisions become more reliable, understandable, and transparent. AI is necessary to protect user security and privacy because all data on the BC is accessible to the general public. Blockchain has the ability to monitor each step of the

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data processing and decision-making process, which is exactly what it can do. By analysing their behaviours in a variety of data input and application settings, we gain a greater understanding of and trust in the decisions made by AI-based systems.

A few of the challenges AI faces are data sharing, explainable AI, artificial trust, security, and privacy. Different blockchain technologies, such as Deep Chain, distributed ledger, and G-coin, an innovative cryptocurrency system, legacy access control, and others, have been used by numerous researchers to address these problems.

AI for Blockchain:

A blockchain is built and run using thousands of variables and trade-offs between performance and security, decentralisation, and other elements. These choices can be aided by artificial intelligence (AI), which can also automate and improve BC for better performance and governance. Additionally, because the BC's data is open to the public, AI plays a crucial function in protecting users' security and privacy. Scalability, energy utilisation, security & privacy, efficiency, and other issues are all issues with blockchain. To help solve these issues, many academics provide AI technologies including multidirectional RNNs, spark ML, federated learning, genetic algorithms, and federated learning.

In the event that damage is unavoidable, the AI may, at the very least, safeguard the rest of the blockchain platform by severing the attacked portion. A similar AI might control the blockchain, making it more scalable and reliable.

Applications related to Integration of AI and BC

They created a novel PoCC consensus protocol for choosing miners and forming blocks, and they also suggested using an improved sparse neural network (ISNN) to lower the system's overall processing cost. It's residential dwellings, and the authors developed a secure energy trading system based on blockchain. Additionally, prosumers' security is protected using BC technology, and a security analysis shows that the system is resistant to the Sybil attack. ISNN was proposed, and it comprises of two essential elements: SNN (Sparse Neural Network) and the Jaya optimization approach. The Jaya optimization method accelerates error convergence while reducing the number of connections between different layers of neurons.

They used classifier approaches to determine whether the client requests were fraudulent or not. Gradient boosting, ridge, elasticNet, XGBoost, and regression performance were used to monitor the algorithms' effectiveness. They compared the performance of their proposed method, PPSC-BCAI, to classifiers like decision trees, nearest neighbours, and naive bayes for the fraudulent module and risk assessment module and found that it performed better. They also discussed security evaluation using features like security, privacy, and scalability.

The authors discussed the value of BT in various corporate applications. It increases security and facilitates information sharing while maintaining accountability. Blockchain technology is expanding its influence in the business world to help companies attract more customers, The authors suggested BI-AIBT to enhance corporate operations and maintain secure connections among various clients. They examined the ratios of demand forecast, consumer satisfaction, product quality, business development, and consumer behaviour analysis. They discovered that using the suggested BI-AIBT improved the ratios of demand forecast, consumer satisfaction, product quality, business development, and consumer behaviour analysis.

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The distributed general ledger (DGL) technology can benefit from new developments like AI and CV. A distributed general ledger is a type of digital data repository that is shared and dispersed (decentralised) among numerous nations, regions, or organisations. The potential use of DNN learning capabilities on such a universal ledger presents a number of military science challenges, leading to the emergence of new platforms for cyber operations. The military might save money by utilising automated photo analysis and computer vision.

The model employs supervised Machine Learning (ML) techniques to distinguish between dangerous bot- and reporter-generated fake news. On the other hand, the blockchain technology stops the damaging practise of spreading false information. In order to create a blockchain environment, mining, smart contracts, and Proof of Work (PoW) consensus are used. Once it was largely implemented, the system's performance was assessed using a conventional blockchain architecture. Through an experiment and a case study, it was found that custom blockchain requires the least amount of time to compute throughout the module operation.

Applications that integrates AI and BC

Ref.	Year	Use Case/Domain	Technologies		Contributions
			Blockchain	AI	
[20]	2022	Energy Trading	PoCC consensus protocol	Improved sparse Neural Networks	A bockchain-based secure energy trading system for private houses was proposed, employing ISNN to reduce the overall computing cost.
[21]	2021	Business (Insurance data)	Smart Contract, Practical ByzantineFault Tolerance	Machine Learning ,extreme gradient boosting (XGBoost) decision tree	Proposed, a privacy-preserving in smart contracts for cyber risk measurements usingblockchain and AI(PPSC-BCAI).
[22]	2022	Business	Smart contract	AI algorithms	Blockchain technology and artificial intelligence-based business innovation proposed to enhance business operations and maintain safe consumer loyalty.

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[23]	2021	Health Care	Etherium Smart Contract	extreme gradient boosting (XGBoost)	Proposed BATS, a conscience, safe, transparent, and trustworthy telesurgery system with huge ultra-reliable low-latency communication that is powered by blockchainand AI (mURLLC).
[24]	2021	Social media	Proof-of-Authority(PoA), Hyperledger Composer in smart contract	Reinforcement Learning technique, NLP, Markov Decision Process (MDP)	Machine learning techniques were applied to various parts of blockchain and natural language processing (NLP) to better forecast false user accounts and posts and to detect fake news.
[25]	2020	Energy saving using AI enabled 5G	Improved Practical ByzantineFault-Tolerance(PBFT) algorithm, Consortium Blockchain	Unsupervised algoritms, Supervised algorithms, Learning modules	Presented "Block5Gintell," a platform for intelligent and secure data analytics for 5G networks built on the fusion of blockchain and AI.
[26]	2021	Autonomous vehicles.	Etherium Smart Contract	Computer Vision,	Presented a method for automating car park management for autonomous vehicles using blockchain and computer vision.
[27]	2020	Energy Cloud System	Eherium Network.	DL based LSTM model	Outlined a decentralised, secure, BC-based ECM architecture for managing energy clouds.
[28]	2021	Health Care	Hyperledger Fabric	Deep learning algorithm	Proposed deep learning algorithms for myopia correction based on retinal photographs and a blockchain infrastructure to support medical AI research.
[29]	2020	Business	Distributed Ledger	NLP,ML,DL,AI	Presented applications of artificial intelligence and blockchain technology in the field of accounting

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[30]	2021	Digital legal proceedings in Industrial and manufacturing engineering	Blockchain	AI	Suggested that Using Big Data, Blockchain, and AI to analyse how industrial and manufacturing engineering aspects affect the calibre of services offered in digital legal procedures in the Asia-Pacific area.
[31]	2020	Smart City	Smart contracts	AI techniques	Blockchain and artificial intelligence coming together in an IoT network to create a sustainable smart city
[32]	2019	Data Tranperency	Smart contracts	AI algorithms.	Discussed the AI ethics driven transparency and detailed how to leverage blockchain technology as a transparency infrastructure.

[33]	2020	Cryptocurrency	Cryptocurrencies.	ML, DL	Proposed a frame work for Artificial intelligence-driven cryptocurrencies.
[34]	2020	Beyond 5G networks	proof of learning (PoL)Consensus Protocol.	Deep reinforcement learning (DRL),DNN	Proposed Blockchain-powered edge intelligence for networks beyond 5G.
[35]	2020	Defence System	Distributed General Ledger Technology	Computer vision, DNN algorithms	Proposed Applications of decentralisation in defence management employing blockchain technology, computer vision, and artificial intelligence.
[36]	2022	Robot	Proof of Work	Path Planning algorithm based on A*, Genetic algorirthms, Ant colony algorithm	Proposed an algorithm for researching how intelligent robots plan their routes and using blockchain technology.

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[37]	2020	Robot	Linear Consensus Protocol ,W-MSR algorithm ARGOS-BLOCKCHAIN INTERFAce, EtheriumNetwork	Byzantine Robots	Proposed a method that have Shown how using blockchain technology, a swarm of robots can come to an agreement even in the presence of Byzantine robots.
[38]	2019	Robot	smart contract, DLT network	Robots	Proposed Blockchain-based immutable black box logging for robots
[39]	2021	Vehicular Network	Hyperledger Fabric, Practical Byzantine Fault Tolerance (PBFT)	Artificial Neural Network	proposed ALICIA (Applied Intelligence in BlockChain vAnet) offered Accident detection and validation system to choose when and which node to exclude during the consensus process.
[40]	2021	Business (Investments)	Digital Signatures	Improved Artificial Bee colony algorithm(ABC), MOABC	Proposed a method to bolster asset securitization security and lower investment risk using BC and AI
[41]	2022	Construction Industry	Hyperledger Fabric, BBN	multi-buffer perceptron artificial neural network	Proposed AI applications using blockchain technology for Decentralizing construction.
[42]	2020	Self driving Vehicles	Decentral application(DAPP),Public Ledger, Smart contract.	Reinforcement learning integrated heuristic search method (RLIH)	Supply chain management using the proposed Reinforcement Learning IntegratedHeuristic Search Method (RLIH) for self- driving vehicles
[43]	2021	Healthcare.	DistributedLedgers	Convolution Neural Networks	Proposed methods to tackle epidemics similarto the coronavirus (COVID-19) using Blockchain and AI.
[44]	2021	Social Media	Proo of Work, Smart contract	Supervised Algorithms	Proposed work to detect fake news and minimize spreading of the fake news.

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mURLLC	massive Ultra-Reliable Low-Latency Communication
NLP	Natural Language Processing
OBU	On-Board Units
PoA	Proof-of-Authority
PoCC	Proof-of-computational-closeness
PoL	Proof of Learning
PoW	Proof of Work
PPV	positive predictive value
PPSC-BCAI	privacy-preserving in smart contracts using blockchain and artificial intelligence
NPV	negative predictive value
RAN	Radio Access Network
RLIH	Reinforcement learning integrated heuristic search method
RTP	real-time pricing
SNN	Sparse Neural Network
ToU	time of use
P2P	Peer to peer
VANET	vehicular network

ABC	Artificial Bee Colony
AI	Artificial Intelligence
ALICIA	AppLied Intelligence in block chain vAnet
ANN	Artificial Neural Network
AUC	Area Under ROC curve.
BATS	A Blockchain and AI-Empowered Telesurgery System
BBR	Black Block Recorder
BC	BlockChain
BI-AIBT	Business Innovation based on artificial intelligence and Blockchain technology
CPP	critical peak pricing
DApp	Decentral application
DLT	Distributed General Ledger Technology
DRL	Deep reinforcement learning
ECM	Energy cloud management
EDR	Event Data Recorder.
HF	Hyperledger Fabric
IPFS	InterPlanetary File System
ISNN	improved sparse neural network
MSP	membership service participants
MNS	Miner Node Selection

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Conclusion:

We examined and conducted a survey on the most recent advancements in the usage of blockchain technology for AI and AI features for BC in this study. After describing AI, its subfields, its uses, and how it affects BC, we talked about an overview of blockchain technology, its implementations, consensus protocols, and AI powered by blockchain. In addition, a list of various AI traits for blockchain applications is given. Our analysis of the literature shows that there are several research challenges and that the adoption of combining BC technology and artificial intelligence (AI) for applications is still in its infancy.

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