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Blockchain Technology - An Introduction

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Abstract: ***A Blockchain is basically a decentralized, distributed ledger of all the transactions or events which takes place only after involving multiple parties. It ensures high level of security as the transactions which takes place are entirely anonymous. Each transactions or digital events taking place in a Blockchain network is verified, only if it is agreed upon by the consensus of the majority party of the users participating in this process. Bitcoin has been the most popular cryptographic currency since it was invented and it is the best example that uses the Blockchain technology.***
Transactions between individuals have always been a part and parcel of human society for the division of labour made people interdependent. The medium of transaction has also been evolving along with the evolution of society and human consciousness from barter system to commodity money to fiat currency and now to digital currency or cryptocurrency. But as the evolution is a form of error correction, the problem of double spending in digital currency was solved by a distributed ledger system called Blockchain. This paper includes Introduction, Literature survey, architecture, application., future direction of blockchain, current use, advantages and challenges of blockchain Technology.

I. INTRODUCTION

In recent years, there is a lot of buzz on Blockchain. Many have described this as a most disruptive technology of the decade. The technology is being adapted into many verticals like Healthcare, Medicines, Insurance, Smart Properties, Automobiles, and even Governments.
However, so far the most successful implementation of Blockchain is the Bitcoin - A Peer-to-Peer Electronic Cash System, which incidentally is also the first implementation of blockchain technology. Thus, to understand blockchain technology, it is best to understand how Bitcoin System is designed and implemented.

II. BLOCKCHAIN ARCHITECURE

A. A public blockchain architecture means that the data and access to the system is available to anyone who is willing to participate (e.g. Bitcoin, Ethereum, and Litecoin blockchain systems are public). So all the records will be available public and every one can take participate in the agreement process.
B. As opposed to public blockchain architecture, the private system is controlled only by users from a specific organization or authorized users who have an invitation for participation. Private blockchain is more secure since it operated by particular group.

III. ADVANTAGES

A. Blockchaain technology is used to encrypt the transaction data that stored the across the network server instead of a single server,So it makes very difficult for hackers to decrepit the data.
B. Blockchain technology is used to authenticity of assets and prevent fraud.
C. Blockchain technology is used to alteration of all subsequent records and the collusion of the entire network. Thus, data on a blockchain is more accurate, consistent and transparent than when it is pushed through paper-heavy process.
D. Due to the security reasons, this program was made in such a way that any block or even a transaction that adds to the chain cannot be edited which ultimately provides a very high range of security.
E. Blockchain technology allows smart contracts: A smart contract is a computer code that ex-plains a step-by-step transaction. It can be linked to more diverse blockchains, track different goods so that it can exchange / transfer these goods when needed for a transaction.
F. Blockchain can track financial transactions, but it can also serve to keep confidential infor-mation (e. g, issued and controlled by government agencies). But a digital ID through blockchain can be a safer mechanism. The international blockchain ID allows individuals to verify their identity, connect to a family, and even exchange money without intermediary banks.

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IV. CHALLENGES

A. Now a days million of transcation happened at a day, the bitcoin blockchain can only perform 7 transactoin per second. large block size would slow down the propagation speed and lead to blockchain branches.
B. Users also generate many addresses in case of information leakage. However, blockchain cannot guarantee the transactional privacy since the values of all transactions and balances for each public key are publicly visible.
C. Mixing service is a kind of service which provides anonymity by transferring funds from multiple input addresses to multiple output addresses. So it is very hard to find the relationship between sender and receiver.
D. Average cost of the Bitcoin transaction is $75-$160 and most of this cost cover by the energy consumption
E. Prvacy is also a issue in blockchian While confidentiality on the blockchain network protects users from hacks and preserves privacy, it also allows for illegal trading and activity on the blockchain network.

V. FUTURE DIRECTION

A. When users wants to set the blockchain technology in their business so they need to know the suitblle blockchain which fits for their requirement so blockchain testing is used to place to test different blockchains.
B. Blockchain could be well combined with big data. Blockchain could be used to store important data as it is distributed and secure.
C. Recent developments in blockchain technology are creating new opportunities for artificial intelligence (AI) applications. AI technologies could help solve many blockchain challenges.

VI. CURRENT USE

A. Blockchain technology is used to transfer funds from one party to another party.
B. Blockchain would allow businesses, and possibly even consumers, to view how products performed from a quality-control perspective as they traveled from their place of origin to the retailer.
C. Blockchain could further revolutionize the retail experience by becoming the go-to for loyalty rewards
D. Blokchain technology can be used to share used or unused data to business firm. Blockchain also comes in particularly handy when it comes to monitoring supply chains. By removing paper based trails, businesses should be able to pinpoint inefficiencies within their supply chains quickly, as well as locate items in real time

VII. BLOCKCHAIN APPLICATION

A. Bitcoin and has brought a huge impact on traditional financial and business services . Blockchain technology could be applied to many areas including clearing and settlement of financial assets.
B. IoT is proposed to integrate the things (also named smart objects) into the internet and provides users with various services. IOT is network-controlled management of certain types of electronic devices — for instance, the monitoring of air temperature in a storage facility. Smart contracts make the automation of remote systems management possible
C. Reputation is an important measure on how much the community trusts you. The greater your reputation, the more trustworthy you are regarded by others. The reputation of a person can be evaluated on his or her previous transactions and interactions with the community.
D. Smart contracts can ensure that electorates can be elected by the people for the people so that government is what it's meant to be. The contracts specify the electorate's expectations and electors will get paid only once they do what the electorate demanded rather than what funders desired.
E. Key problems in the music industry include ownership rights, royalty distribution, and transparency. The digital music industry focuses on monetizing productions, while ownership rights are often overlooked. The blockchain and smart contracts technology can circuit this problem by creating a comprehensive and accurate decentralized database of music rights Cloud storage will be another application that businesses can take advantage of storage, company that's using the blockchain to provide users with affordable, fast, and secure cloud storage

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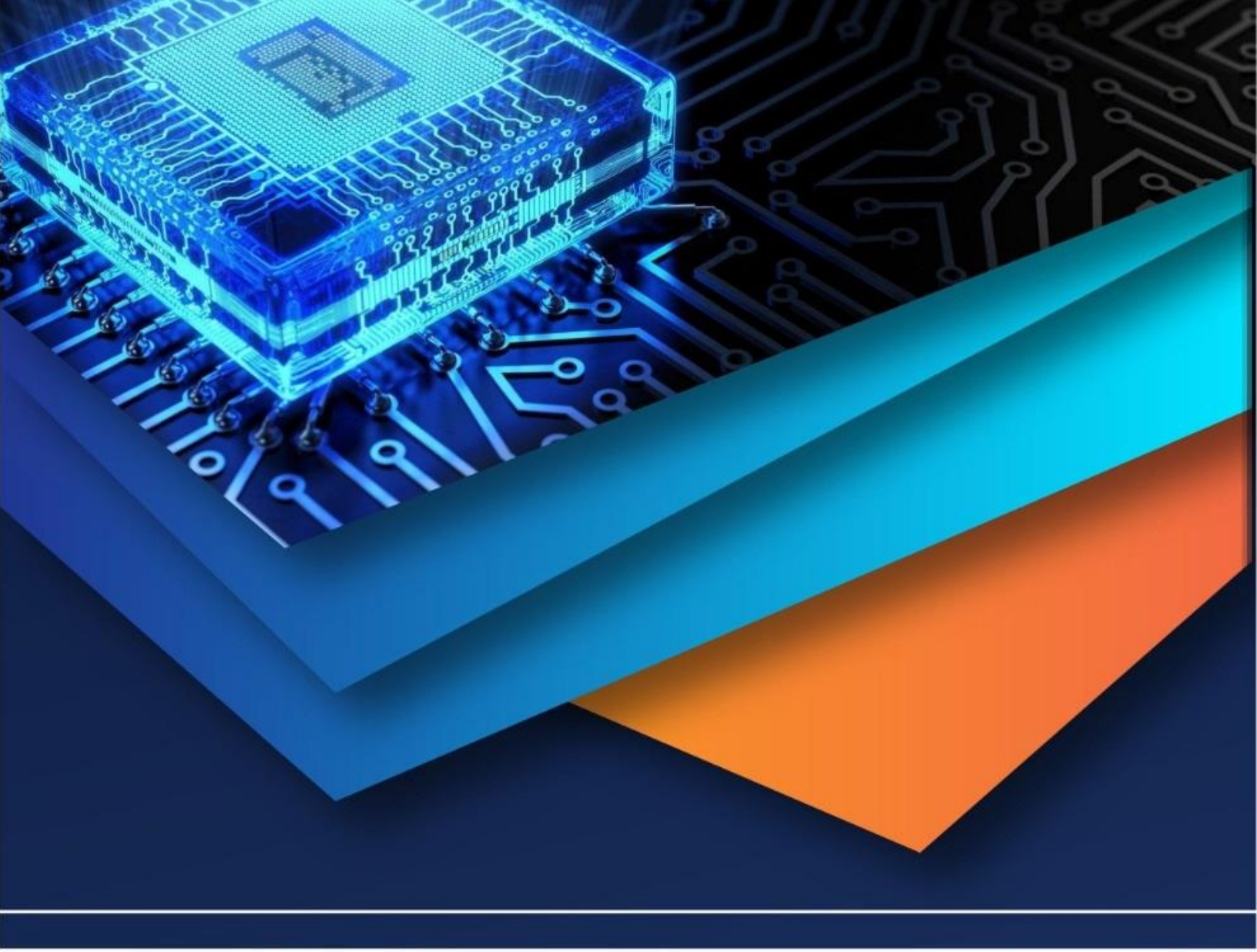
VIII. CONCLUSION

In this short project report you were introduced to several concepts of Blockchain by taking Bitcoin,Advantages,Challenges,Current Use etc. The Bitcoin is the first successful implementation of blockchain. Today, the world has found applications of blockchain technology in several industries, where the trust without the involvement of a centralized authority is desired. It provides a unique, secure way to establish trust in potentially any transaction, Stroring data, enabling simplification of money, product, or confidential information anywhere in the world.

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