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Study of NFT-secured Blockchain Technologies for High Security Metaverse Communication

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Study of NFT-secured Blockchain Technologies for High Security Metaverse Communication

After Covid-19, Metaverse grew in popularity as it encourages remote unique experiences and provides solutions for various businesses such as manufacturing, education, and social media. The Metaverse is a 3D augmented reality world, it is a hybrid of today's social media expanded into three dimensions. Metaverse is a mix of several advanced technologies including Artificial Intelligence, Augmented Reality, Blockchain, Cryptocurrencies, NFTs (Non-Fungible Token) and Internet of Things (IoT) all based on a cloud infrastructure. However, Metaverse have various security challenges due to the multi-layer nature of it, such as identity verification, secure transactions, and privacy. We have analyzed the Metaverse architecture with layers and security solutions for each layer. The common architecture of Metaverse provides specific secure blockchain protocols, such that the blockchain transactions are monitored and kept in the blockchain for extra security. Therefore, the goals of this research are to (1) break down the architecture of Metaverse and provide security technologies for each layer, (2) to suggest blockchain based security solutions to solve issues related to identity verification, and (3) develop an identification solution using NFTs based on the blockchain protocol which gives each user a unique NFT as form of ID, backed up by smart contracts and Ethereum's blockchain. In this research we aspire to make the Metaverse applications more accessible by enhancing the security features and making it a safe place for people to interact without the fear of cybercriminals.