Chapter 5
Blockchain–Based Multimedia Content Protection

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ABSTRACT

This chapter presents a comprehensive overview of the methods and applications of blockchain technology for multimedia content security. These applications are categorised using a taxonomy that takes into account the technical features of blockchain technology, types of blockchain, content protection strategies including encryption, digital rights management, digital watermarking, and fingerprinting (or transaction tracing), as well as performance standards. Moreover, multimedia-based content protection techniques have been covered in this chapter. According to a review of the literature, there is currently no comprehensive and organised taxonomy specifically devoted to blockchain-based content protection solutions. The comparative study is of the most noticeable work done on blockchain-based content protection techniques, which is highly cited by the authors.

INTRODUCTION

A peer-to-peer network called a blockchain provides security for multimedia assets like photographs, audio, video, and more. Technology for multimedia protection shields data from dangers posed by unauthorised users, particularly in network environments [1]. Multimedia data is susceptible to dangers like eavesdropping, malicious alteration, illicit distribution, copying, watermarking, and more, especially in network situations. In this chapter, the authors are mainly focused on various methods of how to secure the multimedia related content which helps to preserve the protected properties include the confidentiality, integrity, ownership, authorization. Blockchain is a decentralized peer-to-peer network and stores the information electronically in digital format. As a result of decentralization, cryptocurrencies are not issued by any centralized organization, such as a bank or the government [2-3]. Mining, a procedure in which transactions are processed and verified by a network of computers, is used to maintain and confirm cryptographic algorithms that are used to safeguard these. As a result of this process, the network's miners receive rewards in the form of cryptocurrencies. Like real money, cryptocurrencies can be sold or swapped for one another since they are fungible.

The blockchain is used in many real-time multimedia applications like IoT, business, healthcare, energy, agriculture, multimedia content security becomes important and urgent. etc. Using blockchain we can track the transactions like tracking digital use & payments for content creators like in image distribution for photographers. Blockchain-based alternative gives artists more control over how multimedia related data spread among dearest [4-6]. Using blockchain we can provide security and privacy to multimedia or information transfer and can track the products [8-10]. We can leverage blockchain in the medical sector to provide peer-to-peer health checks. Blockchain technology may be used to verify the legitimacy of unique product, shipment, and document identifiers as well as to store permanent records of transactions [6-7]. Four types of blockchain networks now available are public, private, hybrid and consortium as illustrated in Figure 1.

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