Blockchain-Powered Authentication:
Reinforcing Identification for Misinformation in AI-Generated Videos

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ABSTRACT

The advent of artificial intelligence (AI) has revolutionized multiple aspects of digital content creation and manipulation, enabling sophisticated techniques for generating and editing videos. While AI-driven advancements offer numerous benefits, they also introduce challenges related to the authenticity and trustworthiness of digital media. The rapid dissemination of manipulated videos, deepfakes, and other forms of synthetic media has fuelled concerns about the spread of misinformation and its detrimental effects on society. This article explores the integration of blockchain with AI video authentication to combat misinformation. The approach leverages blockchain's immutable ledger and AI algorithms to verify content integrity, providing a robust solution against synthetic media threats. The results show enhanced detection accuracy compared to the existing methods.

1. INTRODUCTION

In this chapter, we explore the potential synergy between video blockchain (Gedara, Nguyen, & Yan, 2023), (Moolikagedara et al., 2023), and AI-generated video identification systems to address the proliferation of misinformation in digital media. By leveraging blockchain's decentralized and immutable ledger, coupled with cryptographic algorithms for video analysis. we enhance the authenticity and trustworthiness of digital videos. Our objective is to develop a robust framework that can accurately

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verify the origin and integrity of video content, thereby enabling users to make informed decisions and combat the spread of misinformation effectively.

One of the most pressing concerns in the digital age is the proliferation of misinformation and disinformation, especially through manipulated videos. The ability to create highly realistic but fabricated videos, known as deepfakes has made it increasingly difficult to discern truth from falsehood in digital content. The rapid spread of such misleading videos has serious implications for society, ranging from political manipulation to reputational damage and privacy breaches (Hu & Yan, 2020), integrity of digital content in the face of evolving technological capabilities. By exploring the integration of blockchain and AI, this project seeks to contribute to the efforts to combat misinformation and ensure the reliability of digital media in the digital age. There is a critical need to address the escalating issue of misinformation propagated through AI-generated videos. As AI advances, it becomes increasingly challenging to distinguish between authentic and fabricated content.

In response to these challenges, there is a growing need for innovative solutions for effectively authenticating video content and mitigate the risks associated with misinformation. Traditional methods of verifying video authenticity, such as digital watermarking or digital signatures are often insufficient in the face of AI-generated manipulation. This has led to explore new approaches that leverage cutting-edge technologies to address this complex issue (Wang & Liao, 2021).

One of the modern approaches is the integration of video blockchains with AI-generated video identification. Blockchain, a decentralized and immutable ledger technology, offers a promising solution for establishing the provenance and integrity of digital assets including videos. By combining blockchain's capabilities with cryptographic algorithms for video analysis, we aim to create a robust framework for authenticating video content and combating misinformation effectively. Through empirical testing and validation, the outcomes demonstrate the efficacy of this approach in mitigating the risks posed by manipulated videos and deep fakes (Mi et al., 2022). By exploring the integration of blockchain and cryptographic techniques, this project seeks to contribute to the efforts to combat misinformation and ensure the reliability of digital media in the digital age.

Overall, this research project is motivated by the urgent needs to develop innovative solutions that can safeguard the by leveraging video blockchain-powered authentication, we reinforce the identification of AI-generated videos, thereby enhancing the credibility and reliability of visual content. This approach offers a promising solution to combat misinformation, safeguarding the integrity of information shared online. Through this chapter, we seek to explore the potential of blockchain in mitigating harmful effects of misinformation, contributing to a more trustworthy digital landscape. With the introduction of AI-generated videos, text-to-video by using OpenAI. This problem has again become the main topic for most of the parties. Additionally, most of the influencers looked at the effect that will be going to happen with this new implementation. Our video blockchain has addressed this kind of problems by combining multiple methods and cryptographic functions (Moolikagedara et al., 2023). It aims to address this problem that is affecting globally. At the moment, we are finding out how to deal with AI-generated content differently. Video blockchain has been employed to secure video files generated in digital surveillance for the smart cities. In addition, it can be implemented by combining appropriate methods to address this misinformation problem.

In this book chapter, we take use of our proposed algorithm to resize and compare the process in the Video Blockchain(VB) that ensures the integrity and authenticity of the AI-generated video content by creating a tamper-proof record by using video blocks. It makes use of a Merkle tree to construct the blockchain for each frame and computes the root hash as a