MACHINE LEARNING POWERED HAND GESTURE INTERFACE FOR INTERACTIVE PRESENTATIONS

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ABSTRACT - In recent years, blockchain technology has shown immense potential in improving transparency and security across various domains, including legal systems. This paper proposes a blockchain-based crime evidence system that ensures secure and immutable storage of crime-related data and evidence. The system leverages blockchain's decentralized nature to maintain an immutable ledger of crime-related information, preventing tampering, and providing reliable access to authorized entities. This system can be used by law enforcement agencies to store, retrieve, and validate evidence in criminal investigations, thereby improving the efficiency and trustworthiness of criminal justice processes.

Index Terms— Blockchain, crime evidence, digital evidence, security, law enforcement, decentralized systems.

INTRODUCTION

The integrity of evidence is paramount in criminal investigations. Traditional methods of storing crime evidence, including physical records and centralized databases, are prone to data tampering, unauthorized access, and loss of crucial information. Blockchain technology offers a promising solution by providing a decentralized and immutable ledger that can secure crime evidence from tampering or alteration.

This paper presents a **blockchain-based crime evidence system** that ensures secure and tamper-proof storage of crime-related data. By integrating blockchain with law enforcement practices, the proposed system guarantees that crime evidence remains intact, providing a transparent and efficient process for law enforcement agencies and legal authorities to handle evidence.

LITERATURE SURVEY

Various studies have explored the application of blockchain technology in sectors such as finance, healthcare, and supply chain management. Blockchain's potential to enhance data security and privacy has led to its adoption in criminal justice systems for secure evidence handling.

A notable study by Gupta et al. (2020) proposed a blockchain-based evidence management system to prevent tampering of digital evidence, achieving improved security. Similarly, Kumar

and Singh (2021) demonstrated the use of blockchain for maintaining an immutable record of evidence, enhancing the integrity and credibility of the criminal justice system.

Table I. Comparison of Evidence Management Systems

System	Features	Advantages
Traditional Evidence Management	Centralized storage, paper records	Easy to access, cost-effective
Blockchain-based System	Decentralized storage, immutability	Enhanced security, tamper-proof
Cloud-based Systems	Remote storage, access control	Easy access, real-time updates
Proposed Blockchain System	Secure, immutable, decentralized	Highest level of security, transparency

PROPOSED SYSTEM

The proposed system consists of the following key components:

1. **Blockchain Network:** A decentralized blockchain network stores the digital evidence, ensuring that the data is immutable and tamper-proof.

2. **Evidence Authentication:** Each piece of evidence is verified using cryptographic techniques before being added to the blockchain, ensuring authenticity.

3. **Smart Contracts:** Smart contracts automate the process of evidence submission, validation, and retrieval, reducing human error and ensuring efficiency.

4. **Access Control:** Only authorized personnel, such as law enforcement officials, can access or update the blockchain, ensuring data integrity.

5. **Audit Trail:** The blockchain provides a transparent and traceable audit trail for every piece of evidence, ensuring accountability and trust in the system.

Fig. 1. Architecture of Blockchain-Based Crime Evidence System

The system's decentralized nature guarantees that once evidence is uploaded to the blockchain, it cannot be altered or deleted. This provides a robust solution to prevent tampering or manipulation of critical evidence.

RESULTS AND DISCUSSION

The proposed system was evaluated by simulating crime evidence data and testing the blockchain's capability to handle evidence storage and retrieval securely. The results showed that the system was able to store and retrieve evidence with zero data tampering, and the smart contract functionality improved the efficiency of evidence submission and validation.

Comparing the blockchain-based system to traditional evidence management systems, it was found that the blockchain system significantly outperforms in terms of security, tamper resistance, and transparency. The decentralized architecture also makes the system highly resistant to single points of failure.

CONCLUSION AND FUTURE SCOPE

This paper presented a **blockchain-based crime evidence system** designed to enhance the security and integrity of crime-related data. The proposed system ensures that evidence remains tamper-proof and provides a transparent, efficient, and secure way for law enforcement agencies to manage criminal evidence.

Future Scope: Future work can involve integrating artificial intelligence (AI) to automate evidence classification and analysis, making the system even more effective. Additionally, expanding the system to handle multimedia evidence like videos and photographs will further strengthen its applicability in real-world criminal justice systems.

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