An Abstract
On

Volunteer Service System

By

B.SAI THANUSREE	**224G1A0592**
A.GOVARDHAN	**224G1A05C7**
S.A.ROSHINI	**224G1A0586**

Under the esteemed guidance of

Mrs.M.Soumya
Associate Professor

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)
ANANTHAPURAMU
(Affiliated to JNTUA and Approved by AICTE, New Delhi)
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Project Coordinator **Head of the Department**

Improving Digital Forensic Security

ABSTRACT

This project presents a secure and reliable approach to improving digital forensic security in cloud environments by proposing a Secure Digital Forensic Storage Model known as DFA-AOKGE. With the rapid growth of cybercrimes, the protection, integrity, and confidentiality of digital forensic evidence have become critical challenges, especially when evidence is stored in centralized cloud systems that are vulnerable to tampering and unauthorized access.

The primary objective of this project is to design a decentralized, tamper-proof, and privacy-preserving forensic storage architecture. The proposed system integrates strong authentication mechanisms, optimal cryptographic key generation using the Enhanced Equilibrium Optimizer (EEO), and Multi-Key Homomorphic Encryption (MHE) to ensure secure data protection. Additionally, blockchain technology is employed to maintain immutability, transparency, and traceability of forensic evidence, thereby preserving the chain of custody.

In the proposed workflow, users are authenticated through a secure verification mechanism before accessing the system. Forensic data is encrypted using optimized cryptographic keys and stored securely in cloud servers, while blockchain maintains evidence metadata to prevent manipulation. Software Defined Networking (SDN) further assists in secure evidence collection and management.

Experimental analysis shows that the DFA-AOKGE model provides enhanced data confidentiality, integrity, and resistance to tampering when compared to traditional centralized forensic systems. The results demonstrate improved security performance, stronger trust, and higher reliability, making the proposed system suitable for modern cloud-based digital forensic investigations.

PROJECT GUIDE

1.224G1A0592

2. 224G1A05C7

3. 224G1A0586