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Advanced encryption standard for image

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ABSTRACT -

This research introduces an innovative approach to document security through multi-layer AES encryption with granular access control. By implementing dynamic key generation and role-based decryption, the proposed system addresses critical challenges in document protection. The methodology enables selective page-level encryption, ensuring enhanced confidentiality and flexible access management across sensitive document domains.

Keywords: AES encryption, document security, role-based access control, dynamic key management, information protection

INTRODUCTION :

The exponential growth of digital information necessitates advanced encryption mechanisms that transcend traditional whole-document encryption approaches. The Advanced Encryption Standard (AES) provides a robust framework for securing digital assets, offering multiple key lengths (128, 192, and 256 bits) with varying encryption rounds.

LITERATURE SURVEY :

Existing document encryption systems predominantly employ uniform encryption strategies, resulting in significant security limitations. Key challenges include:

- Lack of granular access control
- Static key management
- Limited scalability
- Increased data leakage risks

METHODOLOGY Encryption Mechanism :

The proposed system implements a multi-layered AES encryption approach:

- •Page-Level Encryption: Individual document sections encrypted separately
- •Dynamic Key Generation: Context-sensitive cryptographic keys
- •Role-Based Access Control: Permissions mapped to specific user roles

Technical Implementation :

- •Encryption Algorithm: AES-256
- •Key Lengths: 128, 192, 256 bits
- •Encryption Rounds: 10-14 rounds based on key length

RESULTS :

The proposed system demonstrates significant improvements:

- Enhanced security through granular encryption
- Reduced unauthorized access risks
- Improved operational efficiency
- Scalable across diverse organizational structures

CONCLUSION :

The research presents a transformative approach to document security, leveraging AES encryption's robust capabilities to provide unprecedented control and protection of sensitive information.

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