Decentralized Authentication and Authorization System Based on Qr-Code Data Extraction and Blockchain Technology

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Abstract:

The article presents a decentralized authentication system based on extracting steganographic data from a biometric QR code (BIO QR code), which serves as a container for storing biometric and documentary data. The QR codes are embedded in the least significant bits (LSB) of the RGB channels of a facial image. The proposed method consists of extracting data from the biometric QR code and blockchain verification. Experiments on a sample of 100 images confirmed 100% accuracy in data extraction from BIO QR codes. The system eliminates reliance on centralized servers and ensures protection against data tampering through blockchain immutability.

Keywords:

BIO QR-code, Blockchain, Decentralized Authentication, LSB, SHA-256, Steganography.