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Blockchain and QR Code Integration for Counterfeit Detection to Enhance Product Authentication

Counterfeit products pose significant risks to both consumers and legitimate manufacturers, necessitating effective identification and authentication methodologies. This research explores a novel methodology that leverages blockchain technology and QR codes for the detection and prevention of fake products. The proposed approach involves creating a smart contract on the Ethereum blockchain to store unique product identifiers, generating corresponding QR codes, and utilizing open-source tools like Open Refine and Elasticsearch for product information comparison. The process ensures that when a QR code is scanned, the product's authenticity is verified against the blockchain, providing a robust mechanism to detect counterfeit goods. This paper outlines the step-by-step methodology, including the generation of unique identifiers, QR code creation, smart contract deployment, and authenticity verification, along with the use of advanced tools for product comparison. The results demonstrate the effectiveness of this integrated system in mitigating the distribution of fake products, offering a reliable solution for ensuring product authenticity in various industries.

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