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Survey on Fake Product Detection using Blockchain

Dr. Madhu B K[1], Sowmya D[2], Spoorthi N[3], Umme Kulsum[4], Sumanth[5]
HOD, Department of Computer Science and Engineering[1]
Students, Department of Computer Science and Engineering[2,3,4,5]
Vidya Vikas Institute of Engineering and Technology, Mysuru, Karnataka, India

Abstract: *In this technology counterfeiting is very common and dangerous, also another consequence of counterfeiting is that a company's reputation suffers. There are several methods such as RFID tags artificial intelligence blockchain and QR based systems etc. In our survey paper we are focusing mainly on blockchain techonlogy. Blockchain typically managed by peer-to-peer computer network for use as a public distributed ledger. The blockchain technology ensures identification and traceability of original product through the supply chain.*

Keywords: counterfeiting, blockchain, QR code

I. INTRODUCTION

Product counterfeiting has become main problem and identifying the original and fake products are really very difficult. Counterfeit incident are increasing by 20% average in between 2018-20. However, By using Artificial Intelligence, Blockchain technology, it is possible to detect fake products through QR codes. The automatic detection of images and texts using AI will enable users to detect counterfeit products whereas using Blockchain Technology. The blocks hold batches of valid transactions that are hashed and encoded into a merle tree and it is very difficult to access this blocks. The Ethereum, which is a decentralized blockchain platform that establishes a peer-to-peer network that securely executes and verifies application code, called smart contracts. Smart contracts allow customer and seller to transact with each other without a trusted central authority.

II. RELATED WORK

Understanding fake product detection process using ai andblockchain

In AI the automatic image and text recognition and the classification of product information enable end customers to detect counterfeits precisely and quickly by checking then against trained models. In blockchain method it uses MetaMask cryptocurrency and Ethereum network ,there will be customer, seller and manufacturer Phases ,the main thing in identifying counterfeit product is generating QR-code and it embedded by manufacturer which is linked to blockchain system. Each block in blockchain will have a set of transactions related to product or associated with the product.

Limitations and Challenges

Both artificial intelligence and blockchain will have their own limitations and challenges

Although methods of detecting fake products have improved ,there is still a need to improve accuracy. Transaction security ,safety is very important. Even though blockchain as many benefits when compared to artificial intelligence there are also several challenges and limitations like limited scalability, high cost and the need for interoperability between different blockchain network

Conditional text generation

Image and text recognition and classification based on machine learning have the potential to be a key technology in the fight against counterfeiting ,the automatic text recognition in artificial intelligence have the capacity toincrease the detection precisely.

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III. PRE-REQUISITES

Blockchain and artificial intelligence requires understanding blockchain and machine learning and specific use case of identifying counterfeit products as well as knowledge about QR codes. The key aspects in blockchain involves understanding blockchain technology that it operates by creating a digital record of an item's origin and tracing it through the supply chain, Each time the item changes hands, The transaction is recorded on the blockchain.

IV. METHODOLOGY

The Methodology of the project includes the manufacturer and the Consumer unit as described:

This Methodology brings light on security features of the blocks and eliminates the risk of counterfeiting any block within the supplychain of the Blockchain and also eliminates any foreign block to enter the supply chain or cause any changes or Modifications to the elements within the blockchain

SL.NO	Counterfeit Detection		
	Blockchain	Manufacturer	Consumer
1	Tracking information of the product	Stored in Manufacturer block	Stored in consumer block
2	Product details	Added by the Manufacturer	Scanned by the consumer
3	Authentication	Provided with password	Provided with password

The manufacturer's functions include adding the company to the blockchain by providing company name and setting the minimum registration fee to become a seller or retailer for the company. The manufacturer solely preserves the rights to enroll products in the network. The manufacturer can also control the distribution status of products and transfer ownership after a seller has bought the product stock. The manufacturer performs two major functions namely adding and distributing products in this system.

The Algorithm that defines the functionality at the Manufacture:

Algorithm 1: Create Product

Input: Product Name, Product Price, Product Stock Output: Added Product
if manufacturer. sender is not manufacturer then throw;
endelse
insert product in product array end if

For distribution of product Algorithm 2 is used. The product and order status in the blockchain is changed through this.

Algorithm 2: Distribute Product

Input: Product ID
Output: Changed Product Status
if manufacturer. sender is not manufacturer then throw;
endelse
change product status to 'Shipped' and set order status as send
end if

V. EXPECTED OUTCOME

The expected outcome in artificial intelligence include real time detection which enhances security, scalability, data efficiency. Blockchain provide decentralised network where all product details are secured and stored in QR code benefiting sellers ,manufacturer and mainly customer.

VI. CONCLUSION

Block chain is a decentralized system the local suppliers cannot interfere with the checking of counterfeiting of the product in the proposed system. Manufacturers and suppliers can use the system to store product details in blockchain with other certain properties such as tamper resistance, data consistency and confidentially that assure the security and privacy of the data on the network. The customer views the product supply chain history and verifies if the product is genuine or not. Customers can be sure about the integrity of goods they purchase. The proposed system can electively lower the rate of counterfeiting of branded goods and provide the companies with

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an easier approach to provide consumers the confidencethat they will not purchase counterfeit goods. This system will help to build trust and good bonding between manufacture and customer and it will help in improving economy and reducing corruption. in AI the machine learning based approach used in core deep learning and neutral network technologies. The conclusions we can define from the new approach arethat the implementation of the system should be deeper researched.

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