



# FAKE PRODUCT DETECTION USING BLOCKCHAIN

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**Abstract:** In recent Times Blockchain Technology is getting really popular and is very much reliable. Blockchain is Popular due to its security and decentralized system. Blockchain can be termed as a chain of blocks which contain data for each block to be considered as a new node.

In the last few years the number of counterfeit products has been at its peak. Hence, it becomes really important to control the flow of these products as it directly affect company's name, value and may also affect the consumer. So, there is a need of something that can give the consumer the assurance that the product they are paying for is a Real and Legit product and this will also Protect company from defamation.

In this project, by using emerging trends in technology, Quick Response (QR) codes provide a way to counter the fake products. counterfeit products are perceived using a QR code scanner and the QR code of the product is linked to a block of a Blockchain. The proposed system can store the data of products and will generate unique and product specific code of that product and will save it as a block. It will collect the unique code from the consumer which he can get by scanning the QR code given on the product then the system will check for the code in the blockchain database. If the code matches, it will give a receipt of the product to the customer, otherwise it will notify the customer that the product is not legit.

**Keywords:** Blockchain, Hyperledger, Duplica, Ethereum, Counterfeit

## I. INTRODUCTION:

Over the years, the identification of counterfeit goods in market has always posed a challenge for all supply chain

stakeholders. Today, thousands of manufacturers from around the world produce counterfeit goods. However, such goods causesignificant harm to humanity. They threaten the material profits of the owners of goods and trust relations with the buyer and cause direct damage to the health of buyers of goods. That is why methods of combating counterfeiting and detecting original goods methods are being developed. The related anti-counterfeiting technology has already been proposed but not yetperfected. For example in ``Makerchain: A blockchain with chemical signature for self- organizing process in social manufacturing" presents an anti-counterfeiting method composed of chemical signature to represent unique features of personalized products. In this paper, we propose to implement a Blockchain architecture provided by Ethereum to record product ownership on the Blockchain. By using Blockchain's untraceability and transparency properties, and the assurance that each record cannot be forged on the Blockchain, consumers don't need to fully rely on trusted third parties to safely know the source of the purchased product. authentication and traceability of proper merchandise across the supply chain. For every product that the administrator provides, a special QR code is generated and saved in the database. The system is built on a blockchain, and businesses that use it will just have to spend the necessary sums of money to create and modify their contracts. Anyone may readily establish the legitimacy of a business and the consumer's purchase of goods using fully revealed smartcontract information. Using this anti counterfeit blockchain technology, companies can demonstrate that the products they offer are real, eliminating the need to compete with low costimitations

All the transaction records will be stored in the form of blocks in the blockchain. In the proposed system we are assigning a generated QR code to a particular product and the



end customer can scan that QR code to get all information about that product. After scanning the QR code we can identify that the product is real or fake.

Once, Consumer scans the QR code and the product is verified. The ownership of the product is transferred to the customer who will get a receipt of ownership.

## II. LITERATURE SURVEY:

### **FAKE PRODUCT IDENTIFICATION SYSTEM USING BLOCKCHAIN[1]**

For the cause that advent of Blockchain technology in 2008, it's been executed in excessive fields to guarantee high statistics reliability and safety, from the usage of Bitcoin to BaaS (Blockchain as a service), a cutting-edge blockchain fashion that competencies as a form of cloud-primarily based community for organizations who broaden blockchain-primarily based apps. The well known Blockchain - based totally forex not simplest solves the double- spending trouble however additionally independently confirms the accuracy of transactional facts. For the reason that the Blockchain era serves as the foundation of all applications, hence the integrity of their statistics is assured. This has a look at applying a decentralized Blockchain technology and supply chain technique to illustrate that forestall customers in a supply chain no longer definitely rely upon buyers or other third parties to decide whether or not a product is counterfeit or not. This changes a commercial enterprise agency's income, brand image. Actual and fake products may be determined by an allotted registry. An anti- counterfeiting decentralized Blockchain solution that manufacturers can use to deliver actual items and not using a need to oversee right now owned shops. This will be accomplished by the manner of authenticating the products at each level of the supply chain. For each product introduced by the manner of the admin which creates a particular QR code using SHA256 QR Code era set of regulations and stores into the database.

### **Fake Product Detection Using Blockchain Technology[2]**

With emerging trends in wireless technologies, Quick Response (QR) codes provide a sturdy technique to fight the practice of counterfeiting the products. The counterfeit products are detected using a QR code scanner, where the QR code of a product is linked to the Blockchain network. So this system can be used to store the product details and generate a unique code of that product as blocks in database. It collects all the unique code from the user and compares the code from the entries in the Blockchain database. If the code matches, it gives a notification to customer, otherwise it will give the notification to the customer that the product is fake.

### **A Blockchain-Based Application System for Product Anti-Counterfeiting[3]**

Blockchain has received attention and many applications have emerged from this technology. A renowned Blockchain application is the cryptocurrency that has not only been effectively solving the double-spending problem but also it can confirm the legitimacy of a transaction record without solely relying on a centralized system to do so. Therefore, any application using Blockchain technology as the base architecture that ensures the contents of the data are tamper-proof. This uses the decentralized Blockchain technology approach to ensure that consumers do not fully rely only on the merchants to determine if products are genuine. This describes a decentralized Blockchain system with products anti-counterfeiting, in that way manufacturers may use this system to provide a genuine product without having to manage direct-operated stores, which can significantly reduce all the cost of distribution of genuine product.

### **Intelligent System for Checking the Authenticity of Goods Based on Blockchain Technology[4]**

The rapid spread of counterfeit in the market has become a significant issue in the 21st century. Counterfeit goods cause material damage to the producers of original goods and pose a substantial threat to buyers' health. As a result, many companies are already trying to combat this phenomenon in a variety of ways. There are two main ways to combat counterfeiting: the way to find and ban counterfeit manufacturers and the way to identify authentic goods by buyers. The subject of this bachelor's thesis research is the developed information system for the authenticity of goods based on blockchain technology. Here is how this system works. Each product manufacturer is a separate node of the P2P network. Manufacturers create units of goods as individual wallets and give them a certain balance. They then place the public and private keys of the goods in URL format and place the QR codes with this URL on the packaging of the goods, thus transferring ownership of the goods to the buyer. When the buyer scans the secret code, the balance of the interests is transferred back to the manufacturer. When scanning the public code, the system determines product status based on the balance of the product wallet: if the balance is zero, then the product is already consumed, and if not, then the product is not consumed.

### **Identifying Counterfeit Products using Blockchain Technology in Supply Chain System[5]**

With the advent of globalization and the evergrowing rate of technology, the volume of production as well as ease of procuring counterfeit goods has become unprecedented. Be it food, drug or luxury items, all kinds of industrial



manufacturers and distributors are now seeking greater transparency in supply chain operations with a view to deter counterfeiting. This paper introduces a decentralized Blockchain based application system (DApp) with a view to identifying counterfeit products in the supply chain system. With the rapid rise of Blockchain technology, it has become known that data recorded within Blockchain is immutable and secure. Hence, the proposed project here uses this concept to handle the transfer of ownership of products. A consumer can verify the product distribution and ownership information by scanning a Quick Response (QR) code generated by the DApp for each product linked to the Blockchain.

**BLOCKCHAIN:**

In its maximum primary shape, a blockchain is a community of computers that copies and disseminates a digital log of transactions. Every time a brand new interest legitimately takes at the ledger, a file of its miles added for each man or woman's ledger. Each blockchain has a number of transactions. The decentralized ledger that would be managed through numerous participants is called to as disbursed ledger (DLT). A blockchain is a developing series of documents, or "blocks," that are related collectively via cryptography. The timestamp, a cryptography hashing of the chain earlier than it, and transaction records are all blanketed in every block (commonly represented as a Merkle tree). Its design, a blockchain, is proof against information amendment. This is due to the fact that as soon as records have been recorded; it cannot be changed back without affecting the blocks that come after. If you want to feature a shared database, a blockchain is frequently controlled by using a peer to peer network that abides with the aid of a standard governing inter-node communications and certifying genesis blocks. Even though data on the community can nevertheless be modified, Blockchain is an example of a dispersed computing device with top notch Byzantine fault tolerance. Described as "an open, distributed ledger that may report transactions among two parties fast and in a verifiable and permanent shape," the blockchain is a decentralized database.

**ETHEREUM:**

Programmer and co-founder of Bitcoin mag Vitalik Buterin first delivered Ethereum in a whitepaper in late 2013 with the intention of creating decentralized packages. Buterin counseled that Bitcoin and blockchain technology can be used for more than just monetary transactions and that a scripting language changed into essential for the advent of apps. This can result in the addition of actual international belongings like shares and actual property to the blockchain. Buterin produced the colored cash challenge's white paper explaining capability use cases for blockchain generation in 2013 whilst

working briefly with eToro CEO Yoni Assia at the venture. He recommended the introduction of a new platform with a greater universal scripting language, which might ultimately turn out to be Ethereum, however after failing to at ease settlement on how the assignment ought to move ahead.

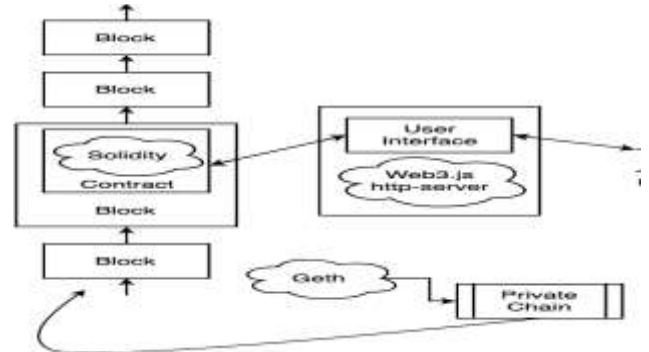
**SYSTEM DESIGN:**

We propose an irreproducible and complete product anti-counterfeiting system, which is based on Blockchain. In our scheme, manufacturers can use this system to store relevant information on product sales in Blockchain which is accessible to anyone. The total amount of sales that can be sold by the seller and the number of products currently left by the seller are transparent to users. The user can use the functions provided by our system to immediately perform vendor-side verification, and this verification cannot be made.

**OPERATION FLOW:**

In our design, the manufacturer is responsible for pushing seller information to the contract, including the number of products the seller can sell and the seller address. After the seller obtains the manufacturer's authorization, he can obtain a certain amount of recording rights for the products that he can sell on the contract. When the consumer purchases the product, the seller stores the consumer's address via the system to the contract to complete the transaction. Consumers can use the system to directly search for whether the seller is in the contract and whether there are unsold products available for trading. After purchasing, the consumer will provide the manufacturer with the information that the product wants to mail and encrypt it with the consumer's own private key. The manufacturer receives the encrypted data and will use the consumer's public key to restore it. If the information is consistent with consumer information, the manufacturer will send the product to the consumer and complete the shopping process.

**ARCHITECTURE:**



Fig[1]: Architecture of the model



### III. CONCLUSION:

Through this research we came across different accepts of Blockchain technology. And finally developed a Robust, Affordable, Simple, Decentralised and highly secure application, that deals with fake products and detection of fake products. It can be achieved by scanning the QR code attached with the products and can handle multiple items at one time. Customers can scan QR codes assigned to a product and can get all the information like transaction history, current owner based on which end-user can check whether the product is genuine or not.

The overall summary is to create and design a Anti-counterfeit system using blockchain and SHA-256 algorithm.

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