International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 06, ACSCON - 2026

Fake Product Detection

Mrs. Lakshmi Priya P Assistant Professor
Department of CSE
ACS College Of Engineering
priyainlakshmi@gmail.com

Ganesh Prasad S Tavarer
Department of CSE
ACS College Of Engineering
ganeshprasadtavarer@gmail.com

Chandra Chooda S
Department of CSE
ACS College Of Engineering
chetanaradhya2402@gmail.com

Harshith KT
Department of CSE
ACS College Of Engineering
harshithkt73@gmail.com

Chetan A M
Department of CSE
ACS College Of Engineering
chetanam65@gmail.com

Abstract — Risk factors like copying and duplicating the products are frequently accompany the global enhancement of a product or innovation. The reputation of the company and the trust of the customer will be affected by the duplicate products. It has been a very difficult task for the customers to find the fake products. It is necessary and will be helpful to have a system for customer to verify all details about product that they are buying so that the customer can check if the product is genuine or not. There are brands specifically copy these original makers and market their product everywhere increasing their economy while the real owners of that brand face a loss in their sale and have to face various consequences. As a result the real brand owners are facing problems dur to these counterfeit companies who are located in a unknown region and fake the products to sell and make money. False goods have a serious non-positive effect on the organization and the clients' welfare. As the result, product makers are facing severe hardship. India and other countries are fighting against such phoney and fraudulent goods. Fake Product Detection System can be used to find original items and detect fraudulent products. Blockchain technology is a distributed, decentralized ledger that maintains all types of transactional information in the form of blocks in a network of database/nodes.

I. INTRODUCTION

Buying stuff isn't as easy as it used to be. Some knockoffs seem just like the original. Fake items don't just hurt a company - they confuse buyers and put them at risk. Whether it's gadgets, cosmetics, or pills, phony products might cause real harm. For that reason, we built the FAKE PRODUCT DETECTION so folks can check authenticity before buying.

Our system doesn't rely on guesswork or small clues - tech does the checking instead. Every item gets its own unique code or QR, saved securely. Use your phone or laptop to scan it anytime. Once scanned, the platform pulls up details instantly. You'll know straight off whether it's genuine. It works quickly, no delays, built to be trusted. It helps customers feel sure about what they're buying and helps companies protect their name.

Companies can easily track their products, cut down on fakes, and protect their customers. Customers get more info and are less likely to get fooled. In a world where it's easy to copy stuff, this system adds a layer of security. It helps everyone make safe choices and lets brands prove they're selling the real thing. It's about making things safer and more trustworthy for everyone.

II. HARDWARE REQUIREMENTS

What you need for building the app differs from what users need. To develop it well, a machine must handle coding, testing, and running tools without lag. Storage should be 500 GB or larger - either HDD or SSD - to fit software kits, code bases, example data, and saved work. Running several programs at once works better when memory hits 8 GB or above. Efficiency during builds improves noticeably with that much RAM available. Fast chips, think 2.5 GHz or more, keep up when building code, running models, or working live. On top of that, a separate graphics card like an NVIDIA GTX 1650 - or better - helps power through visuals and smart algorithms, particularly while managing videos or AI math.

III. SOFTWARE REQUIREMENTS

A Fake product detection is developed to help customers identify counterfeit products and ensure they are purchasing genuine items. The system works on an operating system where the application runs and manages the overall functionality.The front end is developed using Python, which helps in creating the user interface and handling user inputs. JavaScript scripts are used to improve interactivity and make the application more responsive for users. The server-side scripting processes the requests from the user, verifies product information, and communicates with the database. The system uses Cassandra as the database to store product details, authentication codes, and verification records. When a user enters or scans a product code, the system checks it with the stored data in the database and displays whether the product is genuine or fake. This helps reduce the circulation of counterfeit products and protects both consumers and companies.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 06, ACSCON - 2026

IV.SYSTEM DESIGN

This system design is super important for how the Fake Product Identification System turns out. It's kind of like a map for the whole thing - keeps all parts lined up, whether it's building QR codes or handling data. The goal? A setup that does its job right, stays protected, yet feels natural when folks interact with it. Thoughtful work at this stage helps avoid headaches down the road, keeping things stable, solid, and hassle-free over time. The main thing? Getting makers and buyers to chat. Once companies join, they add all the essential details about their items - this lands straight in the system. Every single product then gets a special QR code, sort of like a digital passport. Folks can just snap a photo with their phone to see what's inside.

SYSTEM ARCHITECTURE

The way a system is set up shows how it's organized and works. It also lets you look at it in different ways. On the other hand, a description of this setup gives you a clearer, more detailed idea of the actual system, so you can understand how it's built and how it acts overall. A use case diagram is a simple way to see how someone uses a system. It shows what the user does and how they work with different parts of the system. This kind of diagram also helps you figure out who all the users of a system are and what they do. Use case diagrams usually go along with other diagrams to give you a fuller view of what the system does

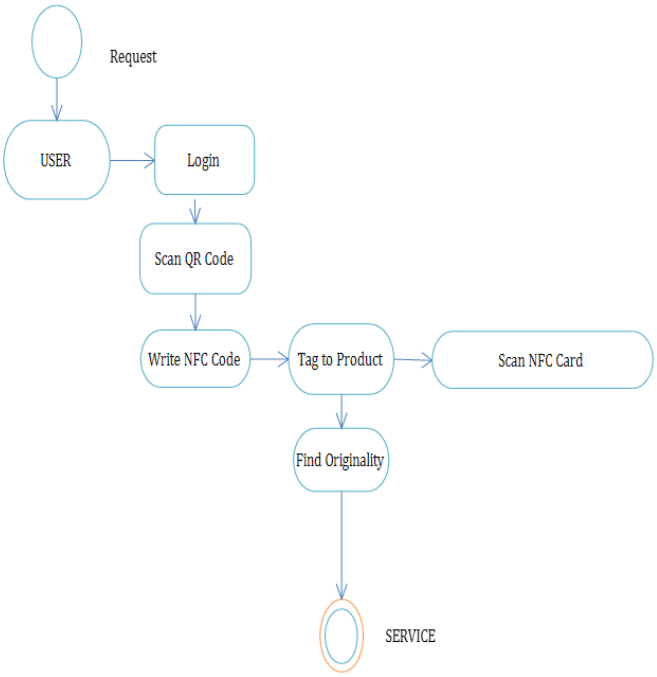

Fig 1.1 Activity Diagram

The way a system is set up shows how it's organized and what it does. It lets you look at it from different angles. An architecture description gives you a better idea of how the thing actually works, so you can get the gist of how it's built and how it acts. A use case diagram is a plain picture of how someone uses a system. It shows what they do and how they mess with stuff in the system. It also comes in handy for figuring out who uses the system and what they do with it. They're usually used with other diagrams for a full view of what the system can do. The app lets you drop in a video file. When it's in, the video heads to the server to get worked on. The server pulls out the main stuff from the video, fires up the trained model, and spits out a better version with sound and words. When it's all done, the souped-up video gets saved and sent back to you, and you can watch the finished video with sound and captions.

A sequence diagram shows how different parts act and talk to each other in order. It points out the classes and things that are part of something and shows the messages they send back and forth to get something done. Sequence diagrams usually go with use cases and show up in the system's brain. People call them event diagrams or event scenarios. When you pick a video and upload it with the app, the file goes to the server to get processed. The server grabs the part of the video with the lip movements and other visual stuff, then works with a trained deep learning model to make the text and sound. The server lines up the lip movements with the speech by using its sequence to sequence framework. After everything's done, the improved video with sound and captions is saved and sent back to you through the app.

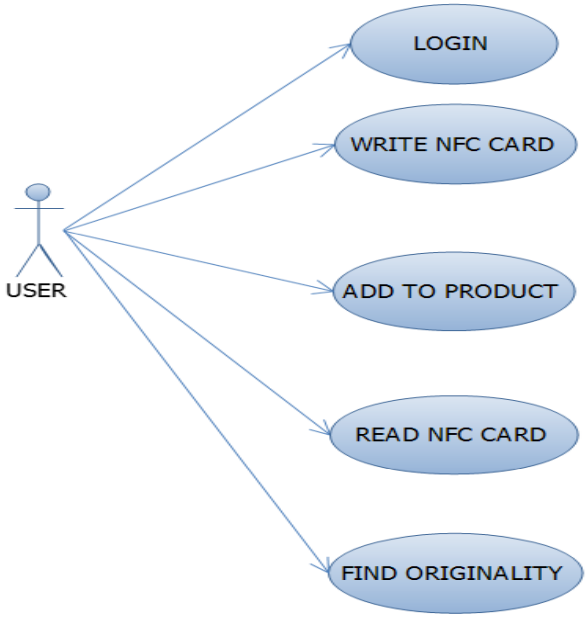

Fig 1.2 Use Case Diagram – Website

METHODOLOGY FOLLOWED

Methodology is just the way a group organizes its stuff—systems, parts, data, all that—to get things done right. It's like using a systems-thinking approach when you're making new stuff. This kind of service is really helpful if your company makes computer systems that mix hardware, software, and communication stuff. Methodologists can assist you in choosing the best hardware and software for a project, then they can design, set up, and launch the whole system for you.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 06, ACSCON - 2026

System architecture is all about the different parts of a system and how they're made to work together. Think of it as one big team. To talk about these architectures, experts came up with special languages called Architectural Description Languages (ADLs). When planning a system's architecture, you figure out the main parts and how they relate. First, you decide what kind of system it is. Then, you create an architecture that handles how those parts talk to and work with each other. By the end of this planning stage – it's like making a construction model – you have a structural plan of the product. This plan shows how the system will be built and gives a summary of what it will do.

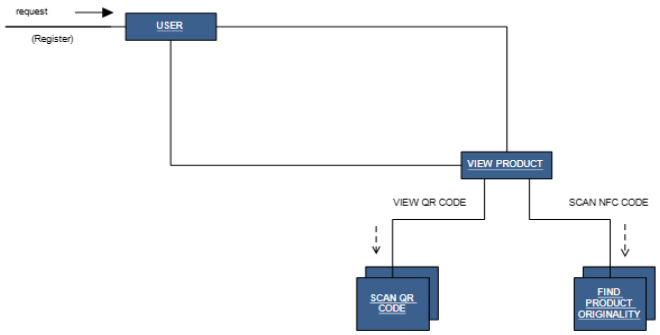

Fig 1.3 Methodology

V. IMPLEMENTATION

After planning and designing and checking out the requirements it is the stage where we implement it. We've checked out how the fake product detector runs, so right now we're building it step by step through code. Since bugs can pop up anywhere, testing nonstop makes sense. It's got to run smoothly - no glitches, no confusion, just solid performance anyone can count on. Start by putting together the core pieces of the system. A key step? Getting ready the spots where makers can sign in, create accounts, then upload details about what they sell. Once a product's added, the platform generates a unique QR tag - this becomes its digital fingerprint. That tag gets printed on the package, letting customers scan it later to see whether the item's legit. Then comes setting up the scanner for the QR code. Once someone points their phone at it, info pops up fast. In case all details line up, you'll know the item's legit. But if anything seems off, a warning shows instantly. For clarity, records stay locked down so they can't be messed with. On the tech side, things get set into motion. Python shapes how the site appears, while Java Server Pages take care of background actions - linking everything to the database. With Cassandra on board, product details stay organized and secure. Every piece comes together gradually so the whole setup runs smoothly, avoiding errors along the way. After testing and making sure it functions, we roll it out for all users. Since manufacturers can sign in and upload details, buyers get clear access to what's real. With everything linked up smoothly, this move tackles counterfeit goods without hassle. It handles the issue practically - no extra steps needed.

VI. RESULTS

We made our Fake Product ID System, and it looks like it could really help stop fake products. During testing, the system generated one-of-a-kind QR codes while securing item details - also confirming authenticity without delay. We picked reliable tools that work smoothly, yet feel simple. What stands out isn't just speed or safety - it's both working together well.

Each time someone scans a code, data pulled from storage appears almost instantly. If a detail seems off, customers notice right away - helping them tell copies from originals without delay. That instant signal works well because verification happens in seconds.

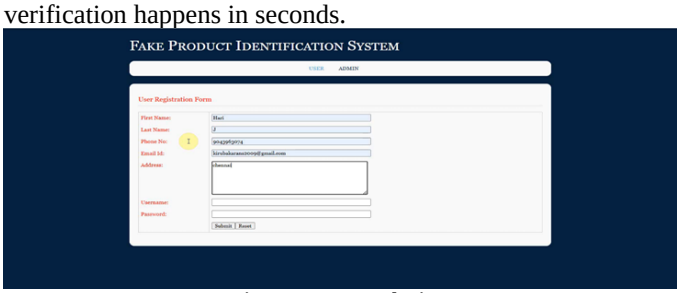

Fig 1.4 User Page login

The folks testing it found adding and managing product details pretty straightforward. Essentially, dropping info into the system and generating QR codes felt smooth. Security measures held up fine, blocking unwanted access to the database. That boost in transparency builds real confidence between sellers and shoppers. Users found the setup simple. Creators and customers said it didn't take long to get going - guidance made sense.

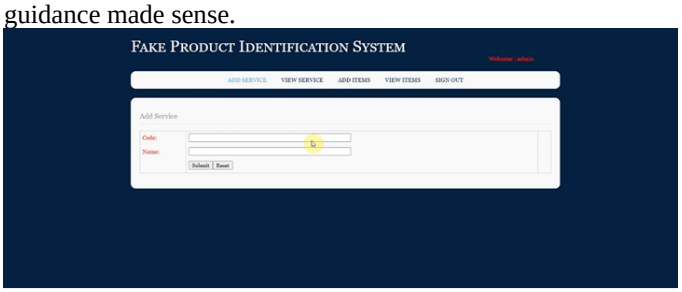

Fig 1.5 Admin adds service which can be viewed by the user

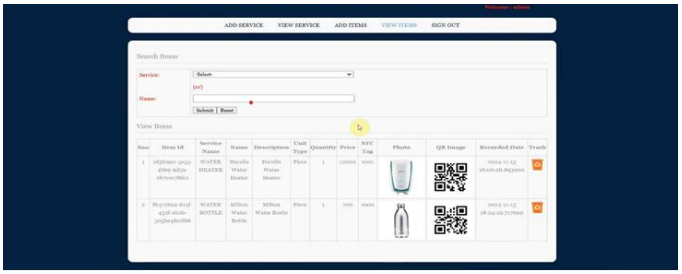

Fig 1.6 Final page for buying and scanning the QR code

The QR reader ran fine on nearly every gadget - meaning folks won't get stuck. It shows how the products that are being bought by the customers on a daily basis , it may be offline or online either way the customer would not be knowing if what they have bought is real or not. In order to tell a difference between what is fake and which is real our system is designed.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 14, Issue 06, ACSCON - 2026

Our system is designed around the brand/manufacturers and customers who buy their products on a daily basis. Once the customer buys the transaction is made it is over, he/she cannot tell the difference between what is real and what is not. Hence, our system aims to help those people and making it very user friendly and easy to use.

VII. CONCLUSION

Fake Product Detection mainly aims where there is a proper use of applications and where security and transparency is very much important. But it is not being largely used in product manufacturing companies. In future, if we can use blockchain technology in combination with Homomorphic encrypted QR code we can literally find out every counterfeited product that was ever created. When the real, original product is manufactured we are going create a QR code and print it on the product itself, so that the buyers can download our company's android application and scan the QR code and find the details of the bought product. Homomorphic encryption will largely impact on the counterfeited products and help in improving the integrity, security of the data when it is stored in cloud. One of the very main achievements of this project is it's ability to create connection bridge between manufacturers and. As we give each and every product a unique digital identity and storing it's data in such a way that it is accessible to the consumer who buys the respective product, they are able to get a detailed information about the product. On the other side manufacturers will have a secure platform to record and store the product data which can prevent unauthorized changes and simultaneously safeguarding their brand name and reputation. This project highlights on how the modern technology can be accessed to solve a real world problem in a very proper demeanor. The tri-combination of QR codes, web technologies and blockchain, makes sure that the system is just functional and limited it can be expanded and improved in the future with even more technologies. It's non-negative test results show how the approach is on point and can make an impact if it is deployed world-wide.

REFERENCES

[1] Divya K and Usha K, "Blockvoting: An Online Voting System Using Block Chain", 2022 International Conference on Innovative Trends in Information Technology (ICITIIT), 2022.

[2] Kamran, Muhammad Hammad Nasir, Muhammad Imran and Joon-Sung Yang, "Study on EVoting Systems: A Blockchain Based Approach", 2021 IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia), 2021.

[3] Gotlamitla Saikiran Reddy, S Radha, Kotekanti Tauseef Taufiq, K Dharma Simha Reddy, K Pavan Kalyan Reddy and P Nagabushanam, "Security based Electronic Voting Machine using Xilinx tool", 2022 2nd International Conference on Power Electronics & IoT Applications in Renewable Energy and its Control (PARC), 2022.

[4] Shambhavi Bhardwaj, T.Poongodi, Ashutosh Dixit and Smita Sharma, "A Decentralized Digital Voting System Based on Block chain Architecture", 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM), 2022.

[5] Swapna Donepudi and K Thammi Reddy, "Comparing and Elucidating Blockchain Based Voting Mechanisms", 2022 International Conference on Sustainable Computing and Data Communication Systems (ICSCDS), 2022.

[6] Feng Tian, "A supply chain traceability system for food safety based on HACCP, blockchain &Internet of things", 2017 International Conference on Service Systems and Service Management.

[7] Abhinav Sanghi, Aayush, Ashutosh Katakwar, Anshul Arora, Aditya Kaushik, "Detecting Fake Drugs using Blockchain", International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-10 Issue1, May 2021.

[8] G. Vidhya Lakshmi, Subbarao Gogulamudi, Bodapati Nagaeswari, Shaik Reehana, "Blockchain Based Inventory Management by QR Code Using Open CV", International Conference on Computer Communication and Informatics (ICCCI -2021) Coimbatore, INDIA, Jan. 27 – 29, 2021.

[9] Swaroop Jambhulkar, Harsh Bhoyar, Shantanu Dhore, Arpita Bidkar, Prema Desai, " Blockchain based Fake Product Identification System", International Research Journal of Modernization in Engineering Technology and Science, 2022.

[10] [10] Srikrishna Shastri, Vishal, Sushmitha, Lahari, Ashwal R Shetty, " ISSN (O) 2278-1021, ISSN (P) 2319-5940 Fake Product Detection Using Blockchain Technology", International Journal of Advanced Research in Computer and Communication Engineering, 2022.