iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** V **Month of publication:** May 2024

DOI: https://doi.org/10.22214/ijraset.2024.62725

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue V May 2024- Available at www.ijraset.com

Scrapify - Turning Waste into Wealth

A M Chandrashekar[1], Rohan Achar V[2], S P Pratheek[2], Skanda Udupi[2], Prajwal S[2]
[1]*Assistant Professor, Dept. of Computer Science & Engineering, JSS Science & Technology University, Mysuru, India*
[2]*B.E Students, Dept. of Computer Science & Engineering, JSS Science & Technology University, Mysuru, India*

Abstract: ***The goal of our work is to streamline the scrap management sector through a website platform that is both user-friendly and highly applauded. By connecting consumers directly with certified recyclers and scrap dealers, we're simplifying the process of recycling and repurposing waste materials, making them more accessible and convenient. This initiative promotes sustainability and empowers individuals to make environmentally responsible choices. By streamlining transactions and ensuring proper certification and regulation, our platform contributes to a more organized and transparent system while safeguarding the well-being of informal workers in the sector. Overall, our work has the potential to significantly reduce the environmental impact of improper scrap disposal and foster a culture of responsible waste management, both locally and globally with the help of the internet and technologies.***
Keywords: Scrap management, recycle, resell, environmental sustainability, JavaScript, react.js, firebase, e-commerce.

I. INTRODUCTION

Waste management has become a critical challenge around the world, as the improper disposal of waste materials contributes to environmental pollution and poses health risks to communities. In particular, the accumulation of scrap, including electronic waste and other recyclable materials, has significant consequences for the environment, leading to soil, air, and water contamination. Addressing this issue requires innovative and sustainable approaches to organize and manage the scrap sector [1].

In India, the scrap management sector is predominantly unorganized, with informal practices that lack efficiency and proper regulation. This unstructured approach often results in unsafe handling of waste and missed opportunities for recycling and resource recovery [2]. Moreover, informal workers in the scrap sector are exposed to hazardous conditions without adequate protection.

To tackle these challenges, Scrapify stands as a pioneering digital platform at the crossroads of innovation and sustainability, poised to reshape the scrap management landscape.

Taking inspiration from the success of renowned online marketplaces like OLX, Scrapify introduces a versatile solution designed to serve individuals, small businesses, scrap collectors, and drivers alike [3]. With a mission to simplify scrap collection, promote eco-conscious recycling, and facilitate the reselling of pre-owned items, Scrapify delivers an unparalleled blend of convenience and environmental responsibility.

Scrapify isn't merely a platform, it's a dynamic ecosystem that provides not one but two vital services. First, it extends the reach of eco-friendliness by offering doorstep scrap collection and recycling services. Users can seamlessly connect with collectors and drivers, ensuring that their scrap materials find a new purpose, contributing to a cleaner environment. Secondly, Scrapify carves a niche as a vibrant marketplace for reselling pre-owned goods, serving as an innovative hub for those looking to buy and sell with ease. Scrapify is the convergence of the practicality of OLX and the dual commitment to eco-conscious practices and efficient e-commerce [4].

A. Problem Statement

The unorganized nature of scrap management leads to inefficient waste collection, unsafe handling practices, and missed opportunities for recycling. This lack of structure contributes to environmental pollution and poses health risks to communities and informal workers involved in waste management. There is a need for an efficient, organized, and accessible platform that connects customers with certified recyclers and scrap dealers, enabling convenient and responsible disposal and recycling of scrap materials [5].

Therefore, there is a clear opportunity for a digital platform like Scrapify to emerge as a pioneering solution at the intersection of innovation and sustainability. By combining the convenience of online marketplaces with the mission of promoting eco-conscious recycling practices, Scrapify aims to simplify scrap collection, streamline the resale of pre-owned goods, and contribute to a cleaner environment.

©IJRASET: All Rights are Reserved

B. Aim And Objectives

Our work aims to develop a user-friendly web-based platform that organizes the scrap management sector and provides recycling and reselling of scraps in one place for money. The platform will provide customers with a convenient and efficient way to sell or recycle their scrap, including electronic appliances, vehicles, and other waste materials. By connecting customers with certified recyclers and scrap dealers, the project seeks to promote sustainable waste management practices, reduce environmental pollution, and empower consumers to make environmentally conscious choices while earning money in the process. This platform aims to bring transparency, efficiency, and safety to the scrap sector, benefiting both customers and the environment.

To achieve the aims of our work, the main objectives are to design and develop a user interface for the Scrapify platform, incorporating features for listing, browsing, and purchasing products. Additionally, implement a system for scrap collection and recycling, enabling users to schedule doorstep pickups and track the status of their materials. Create algorithms for product recommendation, pricing, and bidding to promote engagement and facilitate transactions on the platform. It's important to integrate secure payment gateways and transaction protocols to ensure the safety and reliability of financial transactions. Furthermore, develop administrative tools for managing user accounts, listings, transactions, and other platform functionalities. Lastly, thoroughly test the platform to identify and resolve any bugs or issues, ensuring optimal performance and user experience.

II. EXISTING SOLUTION

The Kabadiwala is a traditional scrap collection service in India, with local dealers collecting recyclables from homes to promote resource reuse. In contrast, OLX is a prominent online marketplace specializing in the resale of pre-owned items. Users can list goods for sale, connecting with local buyers to extend the lifecycle of products. The Kabadiwala emphasizes physical scrap collection, while OLX focuses on virtual reselling, showcasing distinctive roles in sustainable practices [6].

III. PROPOSED SOLUTION

Our present work, Scrapify, addresses the limitations of existing scrap management projects by seamlessly integrating scrap collection and resale. Unlike fragmented platforms that focus solely on one aspect, Scrapify offers a comprehensive one-stop solution. By combining recycling and reselling on a single user-friendly platform, Scrapify eliminates the need for users to navigate multiple systems, providing a cohesive and efficient experience. Our innovative approach ensures that users can fulfill all their scrap related needs effortlessly, overcoming the challenges posed by the disjointed nature of existing projects.

IV. TOOLS & TECHNOLOGIES

In our work, React.js serves as the frontend framework, facilitating the creation of dynamic and interactive user interfaces. Firebase, on the other hand, is utilized for authentication, real-time database management, and storage of images. Following are the tools and functionalities used in our work:

1) *React.js:* Used for building user interfaces in single-page applications. It handles the front end of your application, allowing for dynamic and responsive user interfaces.
2) *Firebase:* Provides tools for developing mobile and web applications. Firebase is used for features like real-time databases, authentication, enabling real-time updates, and user authentication [7].
3) *Material UI (MUI):* Is a React UI framework that offers a set of pre-designed components enabling developers to create consistent and visually appealing user interfaces.
4) *Leaflet:* An open-source JavaScript library for interactive maps. It is used to display maps, likely showing the location of customers and pickup points for scrap items. The "useGeolocationhook" in React is used to fetch the latitude and longitude of the user's device.
5) *Razorpay X Payouts:* A feature of Razorpay for making payments to vendors or customers. It is used in the vendor website's billing section to pay customers who sell scrap items.
6) *React Google Charts:* A React wrapper for Google Charts used for creating various types of charts like pie charts and line charts. It is used to analyze sales and scrap categories in your project.
7) *Express:* A web application framework for Node.js. It is used to handle payout requests and invoice details, providing server-side processing for managing data related to payments and invoices.
8) *Resend:* A service used for sending emails. It is used to send bills to users after they make a payment, providing a way to communicate transaction details and invoices.
9) *Server:* A server is utilized to process payments and handle email notifications. It interfaces with the Razorpay API to securely process payments and utilizes Resend to send invoices and billing details to customers via e-mail.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue V May 2024- Available at www.ijraset.com

V. SYSTEM DESIGN

A. Architecture And Flow Diagram

There are three types of users i.e., Customers, Admin, and Vendor. If the user is successfully authenticated, he will be navigated to the homepage of the respective website.

B. Customer Website

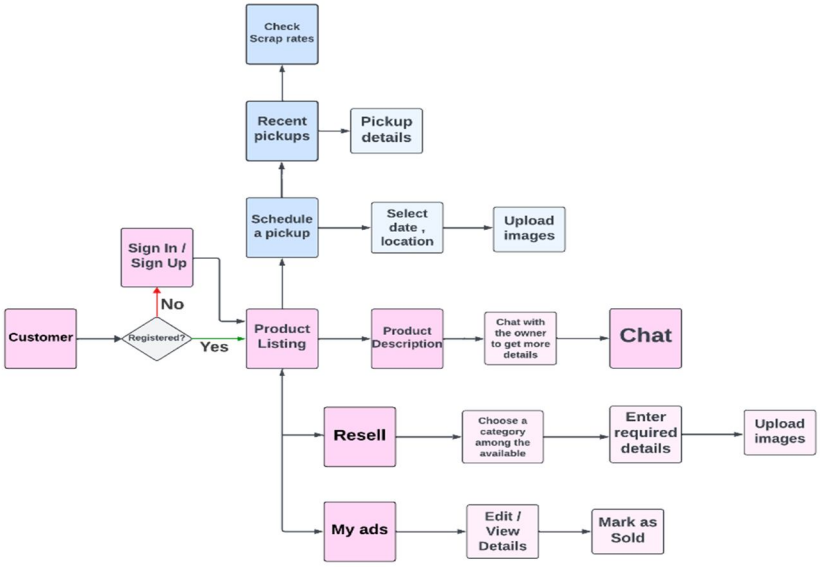


Figure 1 – Customer website design

As a customer, you have access to various features on the homepage. You can view a list of items available for purchase, click on a product to see its description and photos, and even chat directly with the seller. Additionally, you can schedule a pickup of the scrap through the 'Schedule a pickup' section, allowing you to select a convenient date for pickup. You can also review previous pickups in the 'recent pickups' section and check daily scrap prices in the dedicated 'check scrap rates' section. If you wish to sell your products, you can use the 'resell form page' to choose a category, provide necessary details, and upload current state images. Furthermore, you can manage the details of the products you have uploaded for sale, editing or marking them as sold in the 'My ads' section.

C. Vendor Website

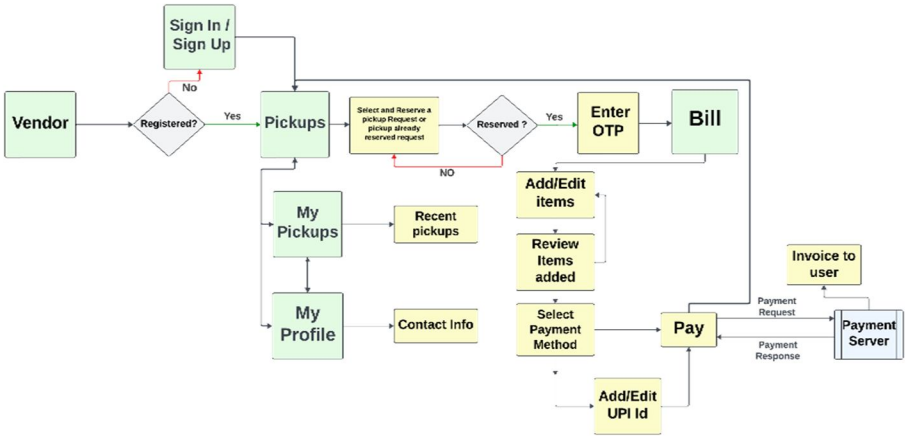


Figure 2 – Vendor website design

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

As a vendor, you have access to the 'pickups' section, where you can view pickup requests from customers and reserve them if you're available. You will be able to see the pickup location and date provided by the customer. When you arrive at the customer's location, you will request an OTP for confirmation, which the customer received when they raised the pickup request. After OTP verification, you can access the billing section to review and add items for payment. You have the option to choose between cash and UPI for payment, and the transaction is securely processed through a payment gateway. Once the payment is completed, the customer will receive an invoice via email. Additionally, you can manage your profile and contact information in the 'My Profile' section and review past pickups in the 'My Pickups' section.

D. Admin Website

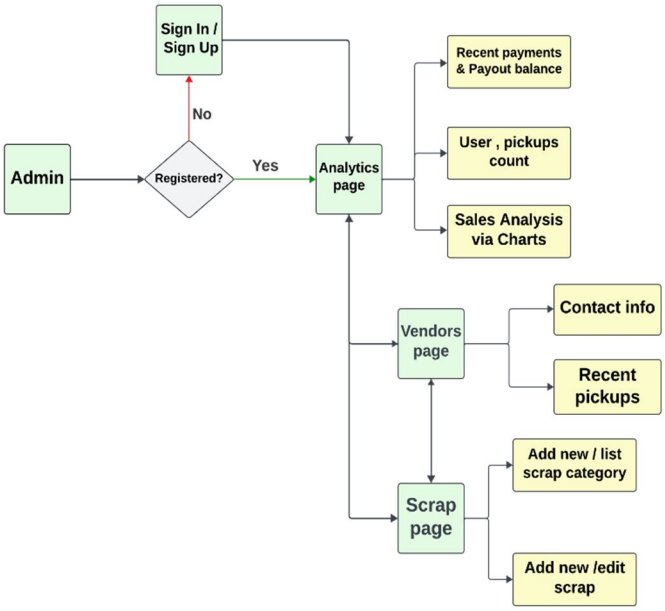


Figure 3 – Admin website design

As admins, we have access to the analytics page as the homepage, which provides valuable information about recent payments, payout balances, user registrations, and order history. Additionally, we can view detailed sales analysis through charts. The Vendors page allows us to access contact information and recent pickups of the vendors. Moreover, we have the authority to add new scrap categories and edit existing details listed on the Scrap page.

VI. IMPLEMENTATION & RESULTS

A. Customer Side

1) Homepage

Scrapify's homepage offers an intuitive online marketplace where users can seamlessly buy and sell a diverse array of items. Whether one is in search of electronics, vehicles, or other commodities, Scrapify provides a convenient platform for users to connect and transact. 'Browse by Categories' Users have the flexibility to explore items based on specific categories, streamlining the search process to find items aligned with their preferences. The homepage prominently showcases fresh recommendations to captivate user's attention. Newly listed items are prioritized, ensuring users are presented with the latest offerings. Moreover, recommendations are tailored based on the user's interests and browsing history, enhancing the personalized browsing experience. Scrapify implements pagination to facilitate navigation through recommendations. Each page displays up to 10 items, allowing users to efficiently browse listings. Navigation between pages is made easy with the next and previous buttons, enabling users to seamlessly explore available items. By offering a user-friendly interface, personalized recommendations, and efficient navigation tools, Scrapify strives to elevate the online buying and selling experience, fostering a dynamic marketplace environment.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

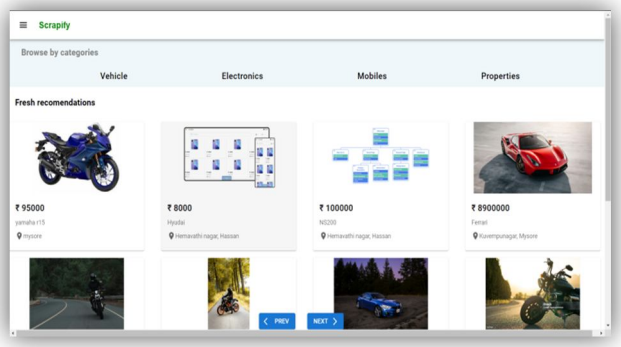


Figure 4 – Homepage

2) Schedule Pickup Page

The Schedule Pickup page allows users to arrange for scrap collection by providing necessary information to the scrap collector and the admin. Users can select a pickup date and must provide the pickup address. They can also upload photos of the scrap items. After confirming the pickup, users will receive an OTP and be directed to a confirmation page. This information is then sent to the admin to assign a scrap collector to the designated location.

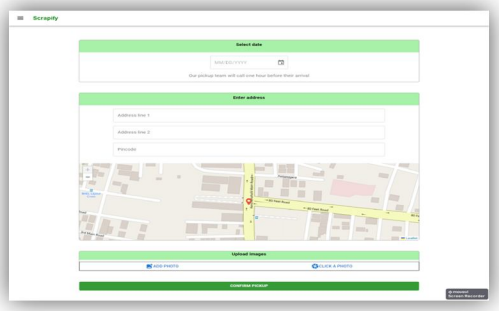


Figure 5 - Schedule pickup page

3) Pickup Request Page

The Pickup Request page on the Scrapify website shows pending pickup requests with unique alphanumeric codes and OTPs for security. Users are reminded to share OTPs with vendors upon arrival. The status message indicates uncollected pickups and request dates are prominently displayed for user reference.

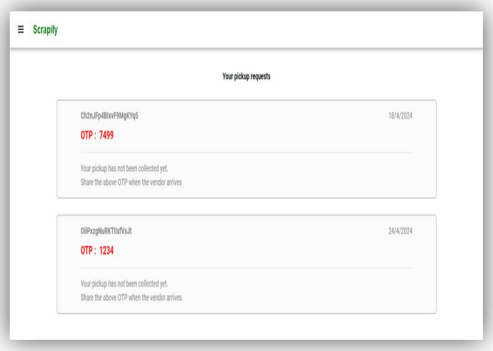


Figure 6 - OTP Authentication

B. Admin Side

1) Home Page

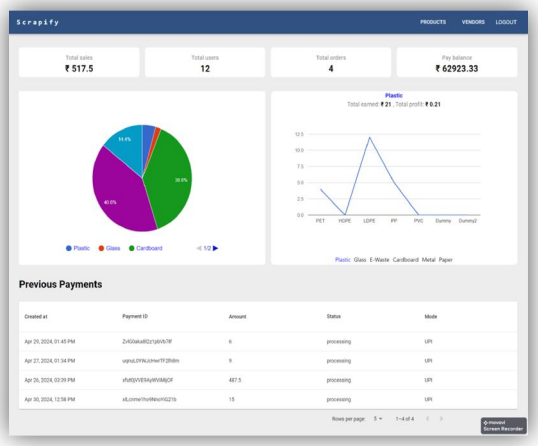


Figure 7 - Admin homepage

Metrics Overview enables the admin to analyze various aspects of the platform's performance, including profitability, user engagement, vendor efficiency, and sales trends. By closely monitoring these metrics, the admin can identify areas for improvement, optimize business processes, and make strategic decisions to drive growth and maximize profitability. The 'Sales Distribution' pie chart visually represents the distribution of sales among different categories. This provides the information to analyze which items are we getting faster and which type of vendor has to be employed extra for the work. The 'Line Graph' also gives the information to the admin to analyze the profit, loss, and overall total sales in the company.

'Previous Payments Table' provides details about previous payments, including creation date, payment ID, amount, status, and mode. This gives all the information about the sales in the company so that he can avoid misunderstandings and clashes between the vendors and customers. It contains the payment ID, amount, date of payment, and time of payment by this information he can manage the issue between the customer and the vendors.

2) Product Page

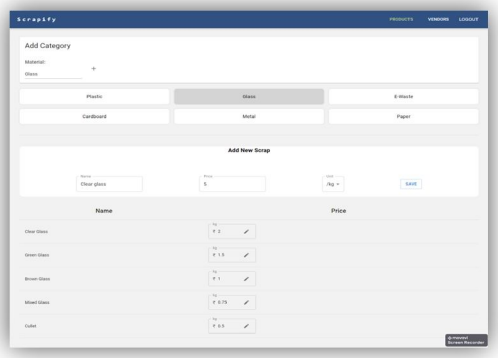


Figure 8 - Scrap add/edit page

This page empowers administrators to set prices for various materials categorized. The existing categories are glass, plastic, cardboard, metal, E-waste, etc. Administrators have the flexibility to add new categories as required. The admin can add a new scrap with its name, price, and unit of measurement (e.g., per kilogram or gram or 1 unit/piece). Upon entering the details, the admin can save the information by clicking the 'SAVE' button. This action ensures the inclusion of the newly added scrap material in the Firebase database.

C. Vendor Side

1) Pickup Request Page

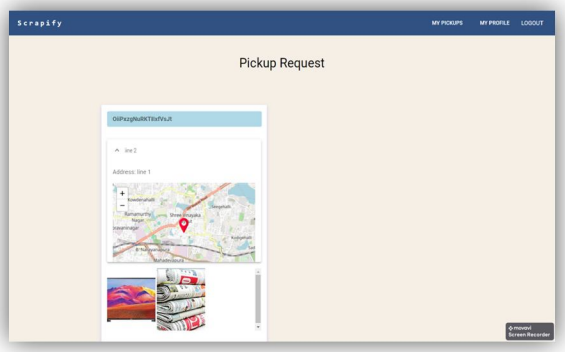


Figure 9 - Pickup details in the vendor page

On this page, the vendor can accept various types of pickup requests based on their convenience and the distance they are willing to travel. Each pickup request is uniquely identified by a Pickup ID, allowing vendors to easily distinguish between different requests. Additionally, the page integrates maps to provide the location of each pickup request, enabling vendors to assess whether the location is within their proximity. Furthermore, each pickup request includes a list of items requested for pickup, allowing vendors to prepare accordingly. To proceed with a pickup request, vendors can utilize the 'Reserve' button to reserve the request for themselves.

During the billing process, vendors are prompted to enter an OTP (One-Time Password) for verification. If the OTP matches, the billing page is displayed, allowing vendors to add items to the bill and proceed with payment on behalf of the customers. This streamlined process ensures efficient handling of pickup requests and facilitates smooth transactions between vendors and customers.

2) Billing Page

The billing page within the interface serves as an essential component for vendors, facilitating seamless transaction recording and payment processing. Vendors can input the items they've collected, along with their respective quantities and prices [8]. The system automatically calculates the total price based on the entered data by summing up the individual item costs. This automation reduces manual errors and ensures accurate billing. The billing page likely offers various payment methods to cater to vendor preferences and convenience, including cash, credit card, and UPI [9]. Vendors can select their preferred payment mode, enhancing flexibility in the payment process. The page also contains an option to enter the UPI ID so the request will be sent to the respective UPI ID and he can pay through that without any cash problem directly to the vendors. After payment, the bill will be generated for the reference of the vendors and customers.

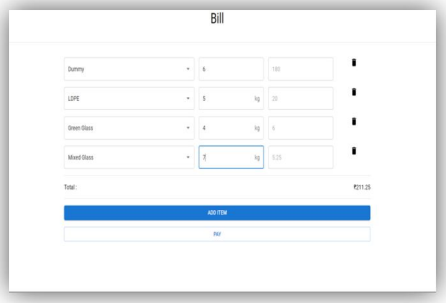


Figure 10 - Billing section

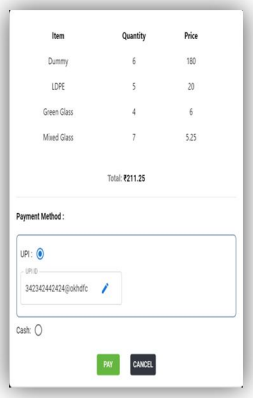


Figure 11 - Payment option

VII. CONCLUSION

We have developed and deployed a website named Scrapify, where you can sell or recycle scraps. It is a user-friendly platform that provides doorstep pickup by our vendors. We offer the most competitive prices for the scrap you provide and charge reasonable fees for scrap recycling. Additionally, you can sell electronic appliances, vehicles, or any other scrap that is of no use to you and earn money from it. To ensure security, our website includes features such as authentication for logging in, and we provide an OTP when you request a pickup, which must be shared with our vendor. Scrap will only be collected if the OTP is correct. The vendor evaluates the scrap, assigns the amount to be paid to the customer, and then collects the scrap [10]. The customer will receive the payment and an invoice by email if the scrap is verified to be sold. If the customer wants to recycle the scrap, we have a fixed amount for particular scraps. Payment can be made through cash or a secure payment gateway option that we provide, ensuring security and integrity for the customers [11].

We chose to work on this topic after researching various papers and discussing real-world problems that can be solved digitally to benefit people and the environment. We believe waste management can be improved by organizing the flow of waste in the sector. In India, waste and scrap management is highly unorganized. The traditional kabadiwalas rarely visit urban areas nowadays. People who sell scrap to nearby vendors often receive unsatisfactory prices [12]. We aim to address these issues through our website.

Overall, we are satisfied with taking on this project as it benefits the country and the environment in many ways. Our future development plans include integrating an ML model that can automatically detect the scrap and its category upon uploading a picture, as well as improving the user interface.

REFERENCES

[1] Diyasha Sengupta, I.M.S.K. Ilankoon, Kai Dean Kang, Meng Nan Chong “Circular economy and household e-waste management in India. Part II: A case study on informal e-waste collectors (Kabadiwalas) in India” Minerals Engineering, Volume 200, September 2023, 108154, DOI: https://doi.org/10.1016/j.mineng.2023.108154

[2] Prajwal Ratnaparkhe, Tushar Wagh, Sojwal Ingale, Chaitnya Shelke “METRO CITY SCRAP MANAGEMENT SYSTEM” in IJARIIE, Vol-9 Issue-1 2023

[3] Rafiat Oyekunle, Arikewuyo Olawale Abdulgaffar “TRUST IN THE E-MARKET PLACE: A CASE STUDY OF OLX.Ng USERS” Conference: The 5th iSTEAMS Research Nexus Conference At: Afe Babalola University, Ado Ekiti, Ekiti State, Nigeria Volume: Vol. 5 pp 555-558

[4] Puneeth L Sankadal, A M Chandrashekhar, Prashanth Chillabatte “Network Security situation awareness system” International Journal of Advanced Research in Information and Communication Engineering (IJARICE), Volume 3, Issue 5, May 2015

[5] Koushik P, A M Chandrashekhar, Jagadeesh Takkalakaki, “Information security threats, awareness and cognizance” International Journal for Technical Research in Engineering (IJTRE), Volume 2, Issue 9, May 2015.

[6] Yadunandan Huded, A M Chandrashekhar, Sachin Kumar H S, “Advances in Information security risk practices” International Journal of Advanced Research in data mining and Cloud computing (IJARDC), Volume 3, Issue 5 May 2015.

[7] A M Chandrashekhar, Amrithesh, Vishal Rajkumar Naik, Vidyasagar M S, Adesha H “Placement Preparation Portal using REACT JS and Cloud Firebase”, *International Journal of creative research taught (IJCRT)*, ISSN:2320-2882, Volume10, Issue 6 , June 2022.

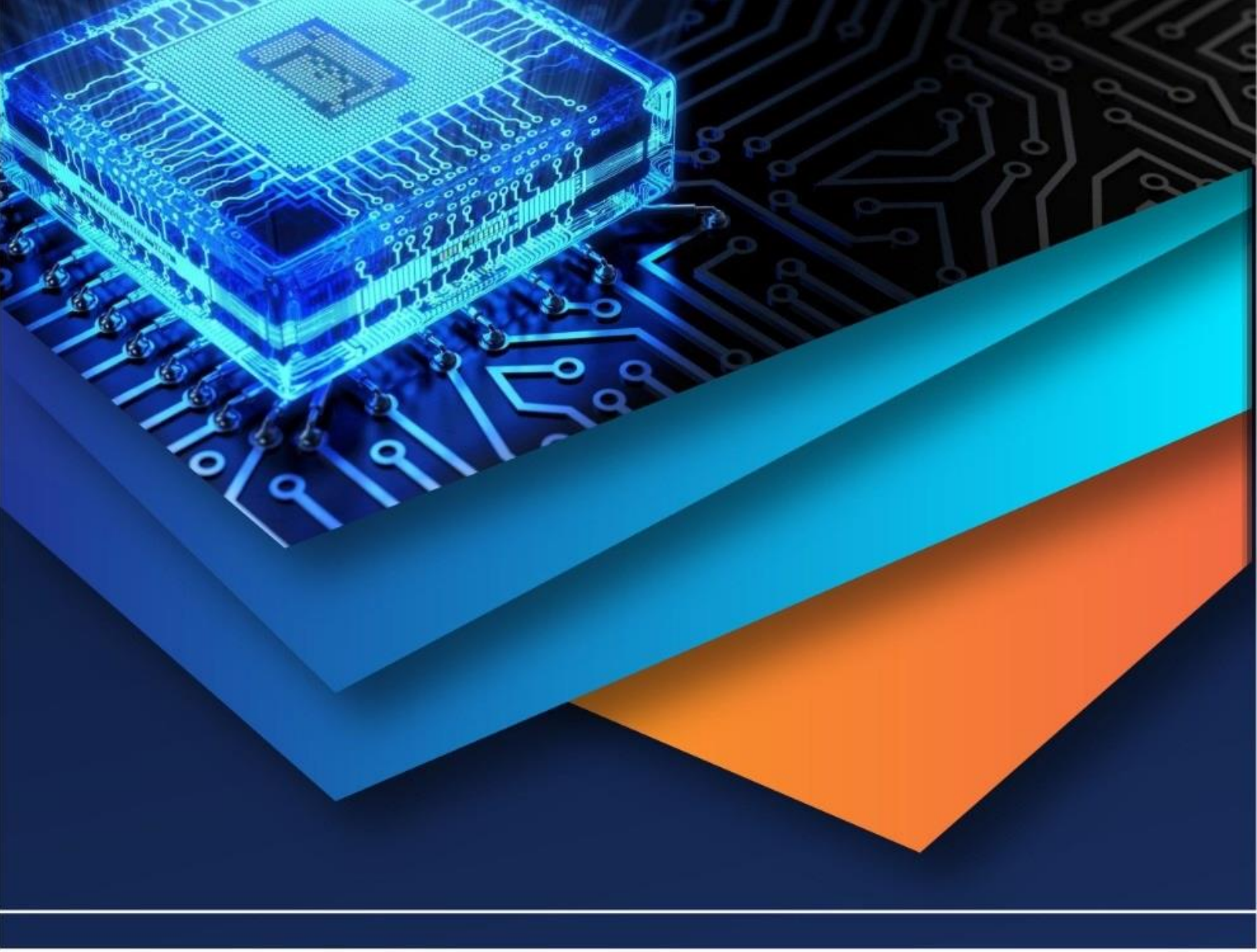
[8] Syed Tahseen Ahmed, A M Chandrashekhar, Rahul N, “Analysis of Security Threats to Database Storage Systems” International Journal of Advanced Research in data mining and Cloud computing (IJARDC), Volume 3, Issue 5, May.

[9] Huda Mirza Saifuddin, A M Chandrashekhar, Spoorthi B S, “Exploration of the ingredients of original security” International Journal of Advanced Research in Computer Science and Applications (IJARCSA), Volume 3, Issue 5, May 2015.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

[10] Chandrashekhar A M, Naveen J., Chethana S., Charith S. (2020) Tackling Counterfeit Medicine Through an Automated System Integrated with QR Code. In: Hemanth J., Bestak R., Chen J.IZ. (eds) Intelligent Data Communication Technologies and Internet of Things. Lecture Notes on Data Engineering and Communications Technologies, vol 57. Springer, Singapore. https://doi.org/10.1007/978-981-15-9509-7_2
[11] Sowmyashree K K, A M Chandrashekhar, Sheethal R S, "Pyramidal aggregation on Communication security" International Journal of Advanced Research in Computer Science and Applications (IJARCSA), Volume 3, Issue 5, May 2015.
[12] Prashanth G M, A M Chandrashekhar, Anjaneya Bulla, "Secured infrastructure for multiple group communication" International Journal of Advanced Research in Information and Communication Engineering (IJARICE), Volume 3, Issue 5, May 2015.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)