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A Review Paper on Public Ration Distribution System using Deep Learning

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Abstract: ***The main purpose of public distribution system is to ensure that the citizens of India will get an ample amount of food material based on their financial conditions. Still the goal is not achieved due to problems like distribution of false ration, corruption, illegal smuggling of goods. Thus, only government authorities in the head office have the authority to access information regarding existing stock and the incoming stock. Manual work should need to replace by a fully automated electronic methodologies with the help of Arduino controllers which is going to measure the goods accurately, update the information regarding ration distribution, transactions and ration card holder information in a digital format on the centralized database.***

Keywords: Public Distribution System, Corruption, Centralized Database, Automation, Digital Format

I. INTRODUCTION

The conventional system of public Ration Distribution was established by Indian Government in February 1944 under the department of Ministry of Consumer Affairs, Food and Public Distribution to distribute essential food and fuel items to the people below poverty line. There are various ration shops in several states across the country. In order to get the ration, people have to go to the ration card which contains all the details such as address, name and age of all family members. There is a fixed amount of ration to be given to the customer and the entry of transaction is made in ration card. This is the complete process that is carried out. However, this system has loopholes too. [1]

Many a times customers are fooled by giving them the less quality and a poor-quality ration. Thus, ending up paying more money for the less quantity and quality of ration. The advantage of this situation is taken by the people working in ration stores. They often manipulate the records of ration for their personal benefits. It gives rise to corruption. As the process is manual and there is no central database to monitor the activities of ration shops, there is no transparency in this system. Even if customers find any trickery, there is no complaint system for the same and hence people suffer due to this. [1]

Therefore, we have proposed an automated ration distribution system which is the primary solution to existing problems. Making use of Internet of Things (IoT) can help to remove many problems. The mistakes made by ration distribution system can be avoided by using an AI/ML ration card distribution system.[3]

II. PROPOSED SYSTEM

In the proposed system, the first step is Registration where user have to fill the Registration details available on the form such as name, mobile number, Aadhaar card number, address, etc. After registration, the user Aadhaar card number is used for future identification of user. [2]

At the time of registration, facial characteristics of users are mapped for the face recognition module and the mapping is done by face application programming interface (Api) so as to authenticate users each time they visit ration shop by using resnet-34 architecture, a 34-layer convolutional neural network. [15]

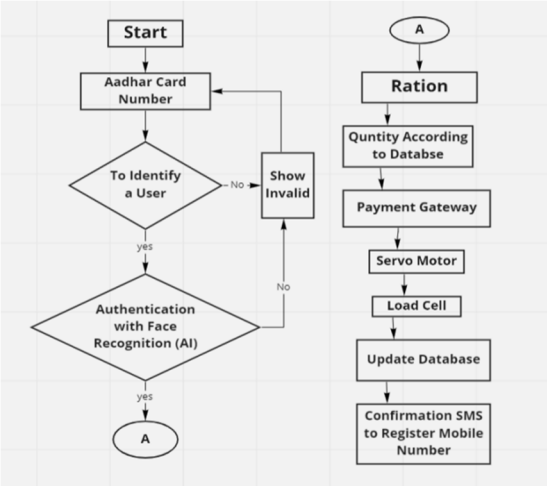
After authentication, the server checks the amount of ration quantity to be distributed to the user to call payment gateway modules for online transactions. Razorpay Sofware Development Kit is used for the payment modules. It's totally the user's choice whether to pay using debit card, UPI, online banking or on-hand cash. [11]

After a successful payment transaction, the hardware part gets activated. It includes a servo motor to start distribution, whereas load cell to measure the weight, after getting a successful ration distribution signal from load cell by using web sockets, the servo motor stops. [14]

Upon successful distribution of ration, entry is made and the centralized database is updated by using Restful Api's and ration distribution confirmation short message service (SMS) get sent to registered mobile number with Aadhaar card number of user by using third party SMS Api. [16]

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III. LITERATURE SURVEY

Sr. No.	Title	Year	Author	Advantage	Disadvantage
1.	Ration Distribution For Poor and Needy People By Smart Ration Card Automation System	2021	Ravindra Jogekar, Rutuja Gavale, Ravi Singh, Tejas Padole, Urvi Khakkar	RFID Tag instead of ration card. Centralized Database.	No data encryption while transferring. Quite easy to manipulate RFID layer
2.	A Smart Public Ration Distribution System	2016	Shubham Maheshwari, Mukesh Tiwari	A 4-digit password-based security, RFID card for individual ration card identification	No backend server to get response from electronic devices. Low end encryption security.
3.	Smart Ration Distribution System	2018	Sonali Parit, Mayuri Patil, Rutuja Patil	Aadhaar card instead of ration card	Authentication layer needed to prevent
4.	Smart rationing system	2017	Surbhi Surkar, S. B. Somali, Rajkumar D. Komati	Authentication process will be through SMS and Aadhaar card	Not a scalable architecture to maintain database calls
5.	Smart Ration Distribution System	2017	Tarun Kumar, Shivani Sharma, Ankush Raina, Nikhil Pathania	Radio Frequency Identification (RFID) for security	Anybody carrying RFID of someone else can collect the ration

The paper on “Ration distribution For Poor and Needy People By Smart Ration Card Automation System” discusses automation in India's ration distribution system, where ration get distributed using automation system but the use of RFIDs for user identification dim’s its security module. [1]

The paper on “Smart Ration Distribution System” also discusses how the public ration distribution can be done but doesn’t have a security authentication layer so corruption will not get solved. [3]

The paper on “A Smart Public Ration Distribution System” discusses how smartly the public ration distribution can be done, where ration distribution with security layer to control the corruption in India. [4]

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The paper on “Smart rationing system” discusses how public ration distribution can be done with a system which has authentication security layer processes with Aadhaar card number and one time password system on user mobile number. But it doesn’t have proper monolithic scalable architecture to maintain the database calls. [5]

The paper on “Smart Ration Distribution System” indeed discusses the smart ration distribution module system perhaps its security layer should have some agile methodology to reduce a corruption. [6]

Above papers still have a void over authentication and scalable monolithic architecture, which needed the most to solve it, a need of proper backend server like a NodeJS, spring boot to achieve scalability and security for users.

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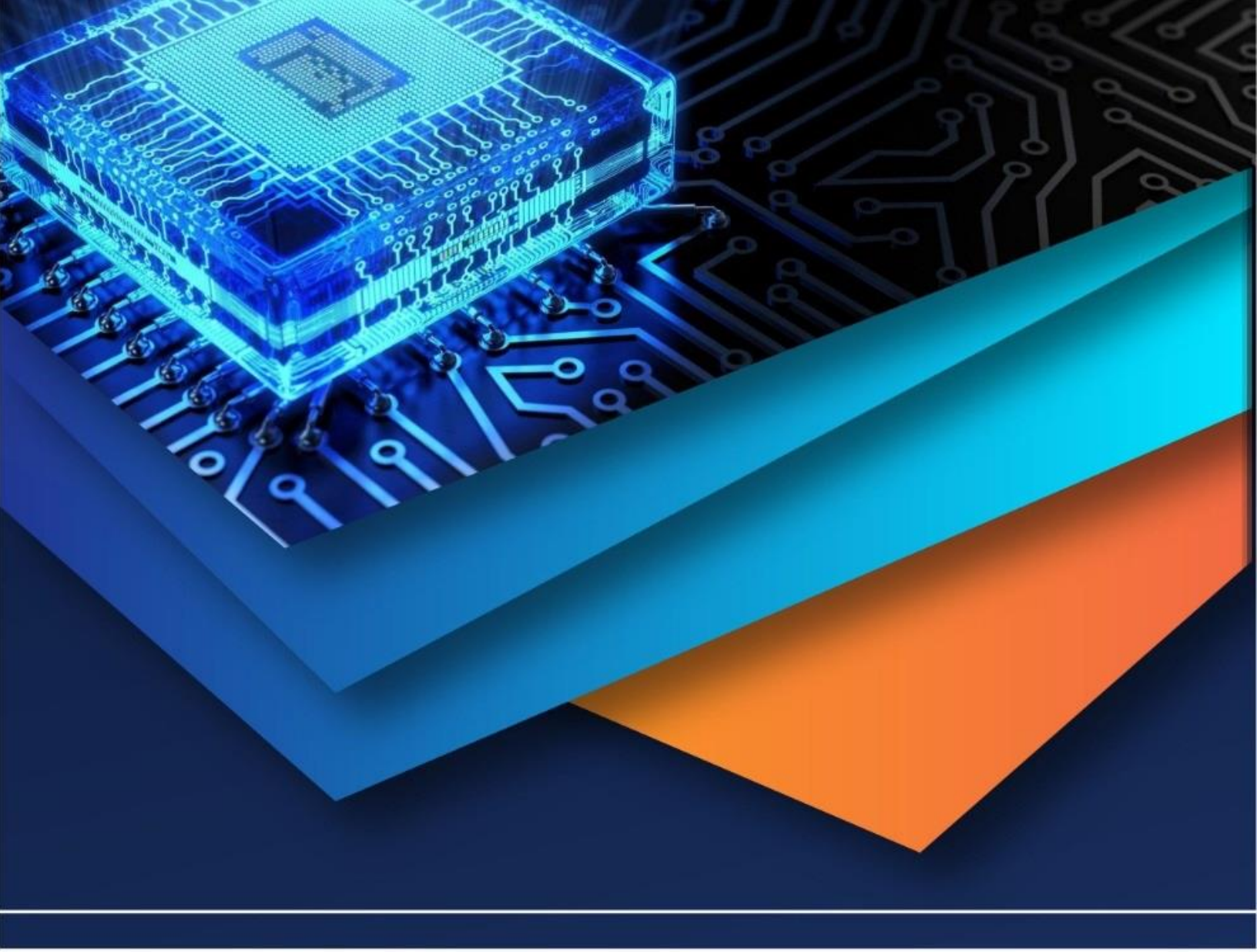
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