IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

IOT BASED SMART FOOD WASTAGE MANAGEMENT SYSTEM

Sreeji S[1], Laya Rose Joseph [2] , Sandhaya S [3], Aiswarya P S[4], Ravindra kumar[5]

- [1]Assistant professor, [1]Department of Computer Science, JCT College of Engineering and Technology, Coimbatore, India.
- [2]Assistant professor, [2]Department of Computer Science, JCT College of Engineering and Technology, Coimbatore, India.
- [3]Assistant professor, [1]Department of Computer Science, JCT College of Engineering and Technology, Coimbatore, India
- [4]Assistant professor, [1]Department of Computer Science, JCT College of Engineering and Technology, Coimbatore, India
- [5] B.E., Final year, [5] Department of Computer Science, JCT College of Engineering and Technology, Coimbatore, India.

Abstract: If you believe you can reduce the amount of food waste by analysing food waste for each individual and awarding Offer bonuses and prizes through reports generated by system. Wasting food is common among students today At university, hostels and at work. This creates great demand Due to future groceries, it may lead to food shortages future generations. Because food waste disposal is a long process. This paper has mainly focused on measuring food waste Offer rewards to users viewing real-time Everyone's Food Waste on Screens and Websites Reference to the future. This study is primarily focused on monitoring. Food loss for everyone. Our model proposes and creates it produce results in parallel, User about the amount of extra food each time. this helps Analyse and generate a list of users who fall into non-food groups Waste standards and reward their noble deeds. We can do it Automate processes manually or over the internet Things as central tools. Uses RFID sensors for monitoring personal waste. Can only be opened with RFID A map provided by the government. It basically automates how to determine the amount of local food waste

Index Terms - RFID, IOT,ARDUNIO WINS MOTER, MOTER DRIVER, WI-FI MODULE,CLOUD COMPUTING, MYSQL DATABASE,SERVOMOTER

I. INTRODUCTION

Food management is always a difficult task for administrators because it requires a lot of work and ongoing analysis each person's food loss. This long process it is supported by the internet of things (iot) [1]. It's important an application with the potential to offer great services. Food waste not only pollutes the environment, adversely affect the economy of a country and have a large impact food demand. In places such as hostels and universities employee cafeteria, company cafeteria extremely large amount of food loss high due to carelessness of staff and students. In fact, that amount of food can feed as many people as possible. I can't afford to buy their food. For separate monitoring of food waste high chance of equipping rewards reducing food waste in these public areas. Of this problem can be

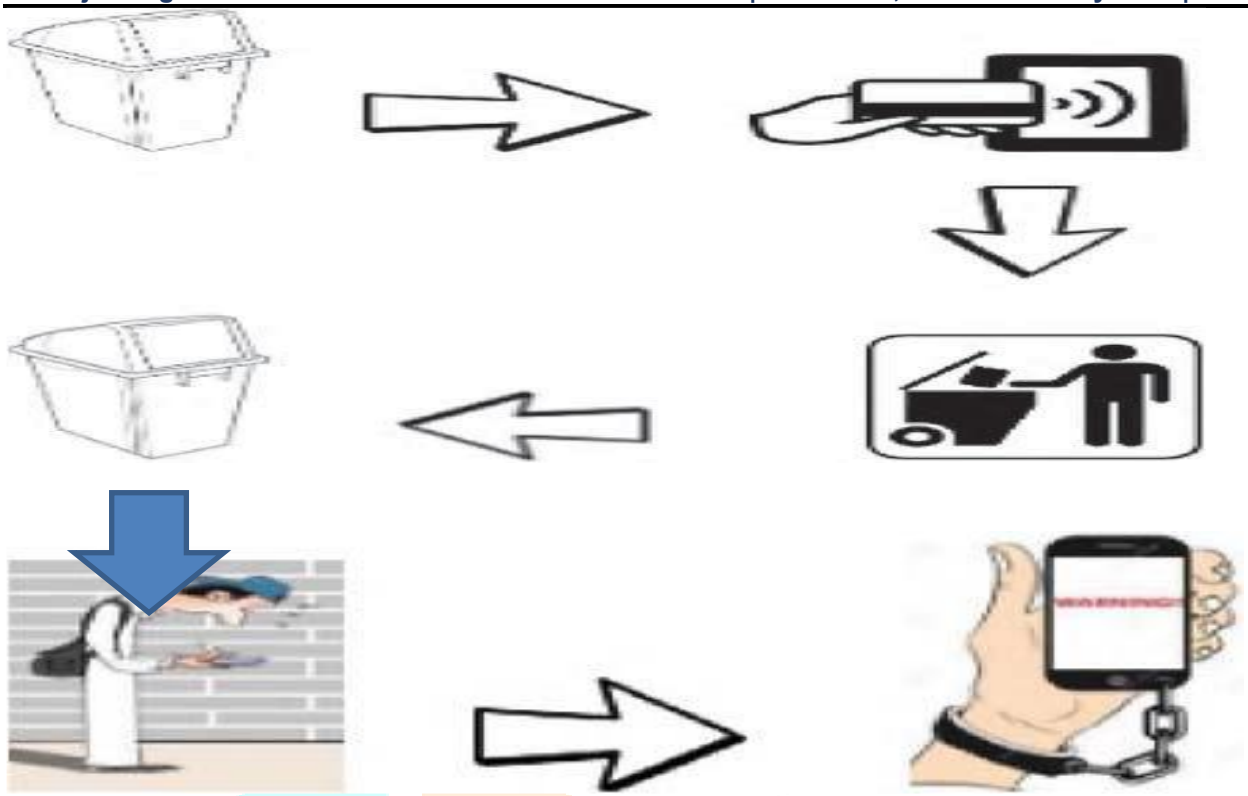
solved by using the internet cloud computing [2]. Security has become the most important issue development of the internet of things.

Waste management objects are combined to form the internet of things (iot). Date verification system with productive information, this information must travel through the main server machine. Information collected on the main server is available analysed and processed according to user needs. This system uses a virtual cloud computing network for storage. All real-time information and data analysis instantly. Reports are generated instantly and effectively by anyone

respective products [3] for future reference. It is very secure as iot provides unique IP addresses. Stealing data from the server is difficult as they are different devices [4]. [five]. Now, cloud storage is becoming a trending platform for storing and retrieving the services through the internet. Cloud computing permits the organization to start for free and charges only when we request for more services. All data captured using iot sensors will be fed into the database for further analytics. But the process of retrieving the data from such a big data lake is exceedingly difficult and, usually the existing system is not capable of processing such volume of data [6], in this case we use cloud computing over big data to store the details. This paper is organised as follows: section 2 outlines the features of iot, detailing its requirements; section 3 provides a brief review of the general approaches in food waste management system describing which ones are desired; section 4 presents a summary of the findings of the investigation; details an experiment that shows how iot handles the food waste management effectively ; section 5 concludes this paper with a discussion on the iot sensors and cloud computing for tracking the persons individually using rfid.

REQUIREMENTS FOR FOOD WASTE MANAGEMENT SYSTEM

In development, leftovers are a concern. School Hostels, dormitories, cafeterias, employee cafeterias, Rituals result in enormous amounts of food waste [7]. This Food waste causes and contributes to pollution many financial difficulties. Modern reports mostly indicate that: Half of the world's food is wasted Food surplus levels are roughly toned and expected to remain the same It will increase in the next few years and pose a pernicious problem. In many developing countries, governments are fighting this. Properly dispose without creating food waste Harm society by implementing innovative ideas, Projects with advanced technology. This food waste is not A problem only in developing countries, but in many developed countries Countries are also affected by this problem developed in many Countries where food leftovers are disposed of in open areas affect the environment. members of society should do the same Be aware of the impact of food waste and avoid wasting it Eat every meal and let others eat Follow the same [8]. Existing systems only have the ability to measure food However, a certain amount of waste throughout the organization or per day Not for everyone[9]this data alone some actions an organization can take to reduce them food waste. Existing systems are semi-automated Processes that require manual checking of reports, and Reward selection must be done manually. as already mentioned Existing systems only count food waste. organization-wide [10]. This leads to very limited Application of data collected by an organization. Collecting data has little impact Raise awareness or take action among people organization. No data in existing system The research portion and applications using the collected data are exclusive. Existing systems can therefore only be used to a limited extent.



Pour food waste into bins and monitor using RFID each RFID is unique, so each person's food waste number. Measuring the amount of food waste with a load cell and everyone in the office will see immediately to the screen which is fixed outside the container each time The amount of waste is then entered into the database. in the All records of each person are collected in a database, An analysis report is produced and the final report is Viewing the administration site. and finally the administration You can take necessary actions based on the report produced by system. Figure 2 shows Proposed method, power supply and Arduino wins motor, load cell, RFID sensor, LCD display, WIFI module, motor driver. Then the WIFI module connected to the Arduino will send the data Won on the server[11]. Pour food waste into bins and monitor using RFID Each RFID is unique, so each person's food waste number. Measuring the amount of food waste with a load cell and everyone in the office will see immediately to the screen which is fixed outside the container each time The amount of waste is then entered into the database. in the All records of each person are collected in a database, An analysis report is produced and the final report is Viewing the administration site. and finally the administration You can take necessary actions based on the report produced by system. Figure 2 shows Proposed method, power supply and Arduino wins motor, load cell, RFID sensor, LCD display, WIFI module, motor driver. Then the WIFI module connected to the Arduino will send the data Won on the server[11].

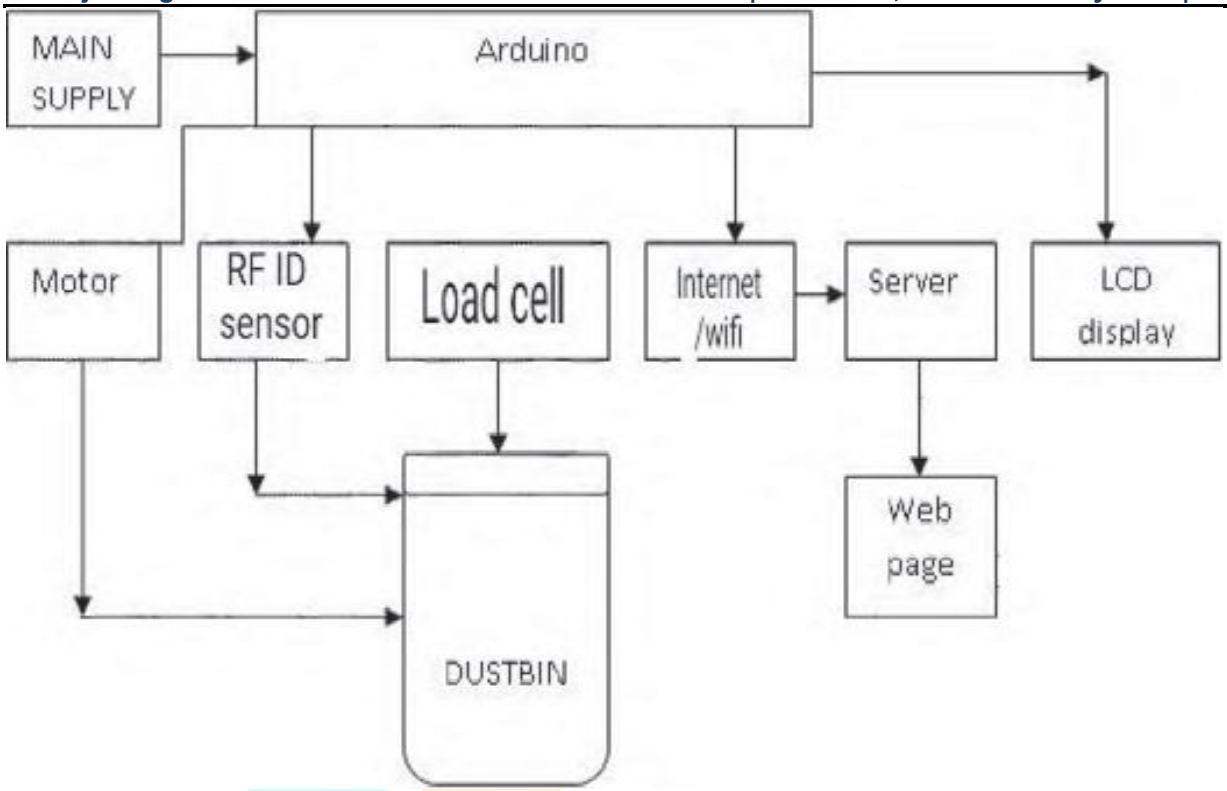


Fig 2: Data flow diagram of the proposed System

Review of the Approaches

The main research focused on

User Interface

Consists of RFID and LED display. A servo motor is a rotary motor Precision controllable actuators or linear actuators Angular or linear position, velocity, and acceleration. it exists A suitable motor coupled with a position feedback sensor. This It also requires a relatively high degree of control. A special module designed specifically for use with Servomotor. Servo motors are rotary drive or linear Actuators that allow precise angular or linear control Position, Velocity, Acceleration [13]. it is suitable A motor coupled with a sensor for position feedback. again, Relatively sophisticated controllers, often dedicated modules Specially designed for use with servo motors. user interacts product and via an RFID scanner attached to the container Open the RFID provided by management. bin[3]. When the user scans her RFID card with a scanner, The LCD display shows each student's student or staff member's ID card map. An LCD display then displays the information to the user. Throw garbage in the trash can. After opening the container The user has to pour the waste into the bin. LCD display show Amount of trash that an individual throws into a trash can user at that particular time.

Weight Management:

This module consists of load cells. load cell is power converter. Transform forces such as tension, pressure, and pressure. Convert pressure or torque into a measurable electrical signal and standardized. As the force applied to the load cell increases, The electrical signal varies proportionally.

A load cell acts as a weight sensor that records weight Amount of food waste shipped by users in containers The weight of the Arduino board so that the LED can display the weight It was trashed by the user at that particular time. Of The measured weight is sent to the server via the Wi-Fi module installed and stored in the database. I am using MySQL Database for data updates.

Hardware Management

This module consists of a motor driver, a motor and an Arduino. Ah Servomotors can be rotary drives or linear drives. angular or linear position, velocity, and acceleration. Consists of a suitable motor coupled with a sensor For position feedback. It also requires relatively sophisticated controls. A special module designed specifically for use with Servomotor. Here we use the motor driver to control it. Direction and speed of motor rotation. Arduino controller All hardware features within the product. the engine is in charge of opening at close functions of the bin when the user scans their RFID.

Database Management

This module consists of a transmitting GSM or WIFI module. Data collected by sensors and user records A server for other tasks [4]. GSM or WIFI module is used Upload waste weight to server database [7]. I am using MySQL as database. HTML can Embeds a program written in a scripting language such as: JavaScript affecting web behavior and content page. Including CSS defines the appearance and layout of the content.

Website Management

This module consists of a user login and an administrator login. User You can log in to check your records [9]. The administrator logs in and Look at each user's record. admin is Has access to add new users with details such as role number. address, contact. So based on your requirements You can improve your database.

Analysis

Analytical chart of feeding amount Figure 3 created A year wasted in different parts of the world. ofThe graph also shows how much food was wasted by consumers And employees involved in production up to trade[10].

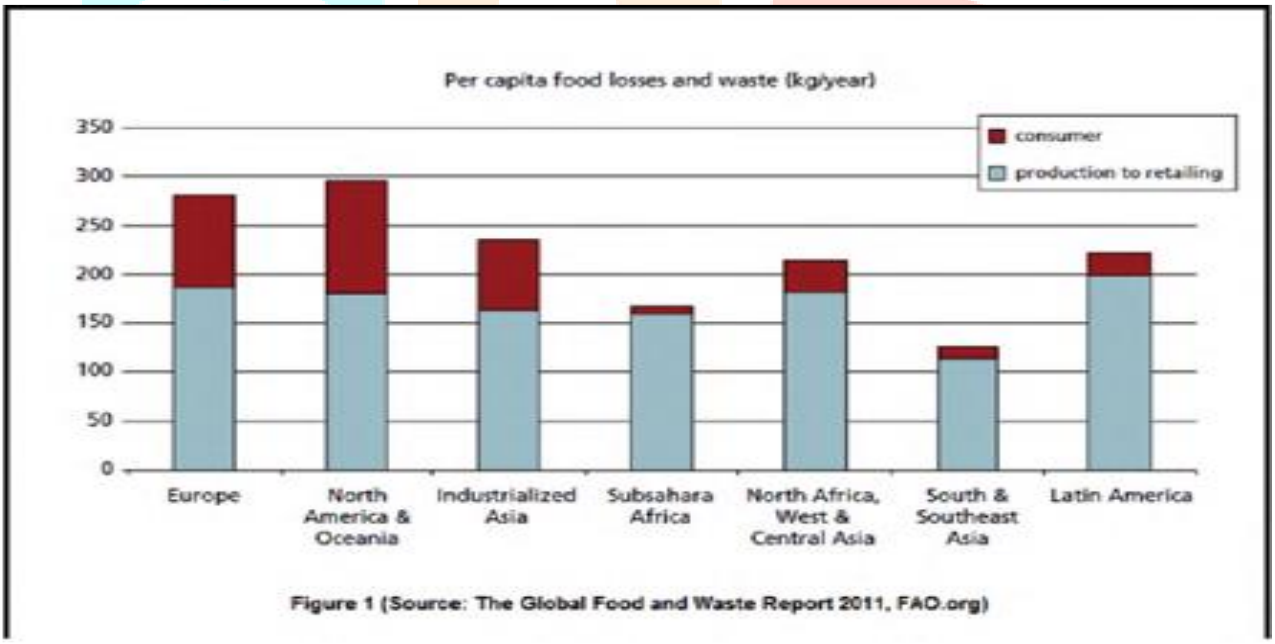


Fig 3: Bar graph shows global food waste report

Card Identification

Consists of RFID and LCD display. the user is Products with RFID scanners for opening containers. The LCD The amount of trash thrown into the trash can. User must scan His RFID card provided by the administrator. one container opens and lasts a few seconds. so users can throw away food waste and get bins Has completed. This process uses a motor driver to control it. Motor rotation direction and speed. Arduino controller All hardware within the product.

Weight Measurement

This weight measurement method consists of a load cell. Load The cell acts as a weight sensor, detects weight, Send the weight to the Arduino board so the LCD can Shows the weight put into the bin. In this system, Weight management plays a big role. The weight of some grace Adjust so that there are no necessary wastes such as peppers, You can reduce bones when saving data.

Record Maintenance

It consists of a GSM module and a user record. Use the GSM module to calculate waste weight A server with a database. This module consists of users Login and admin login. User can login and check recording. Admins can log in to view records for each user

Website Interface

I have two different logins. admin login and user register. Admin login allows you to create and monitor new users Waste dumped by each user. and overload occurs Columns showing data for wasteful users food. So that management can take appropriate action. User login allows all users to login with their own password, Check your food waste. Project implementation hardware and user details, waste details, The image is the congestion situation details page.

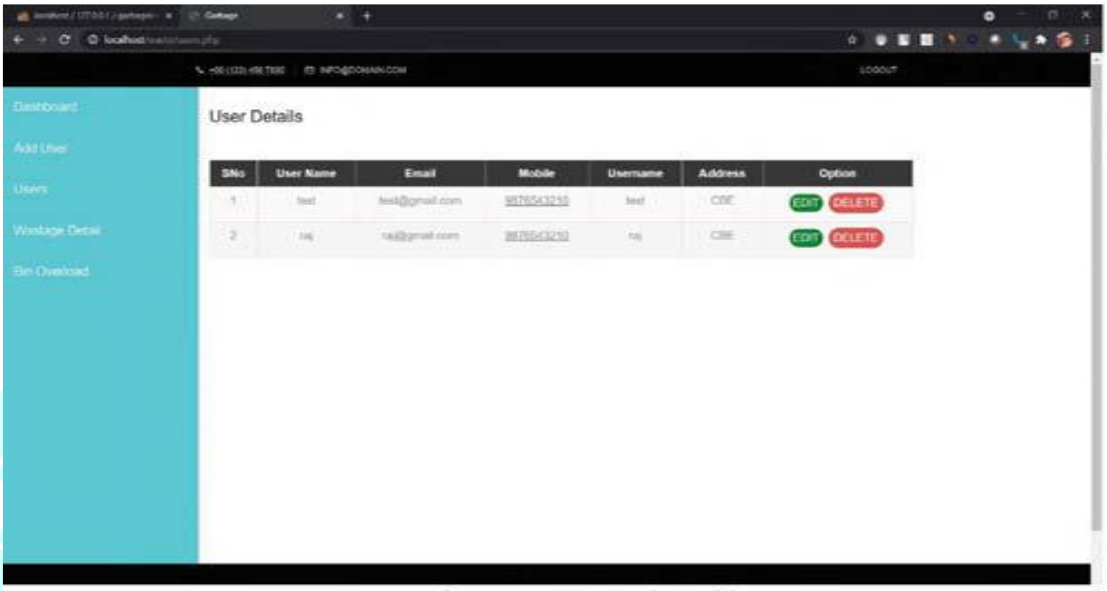


Fig 4: User details

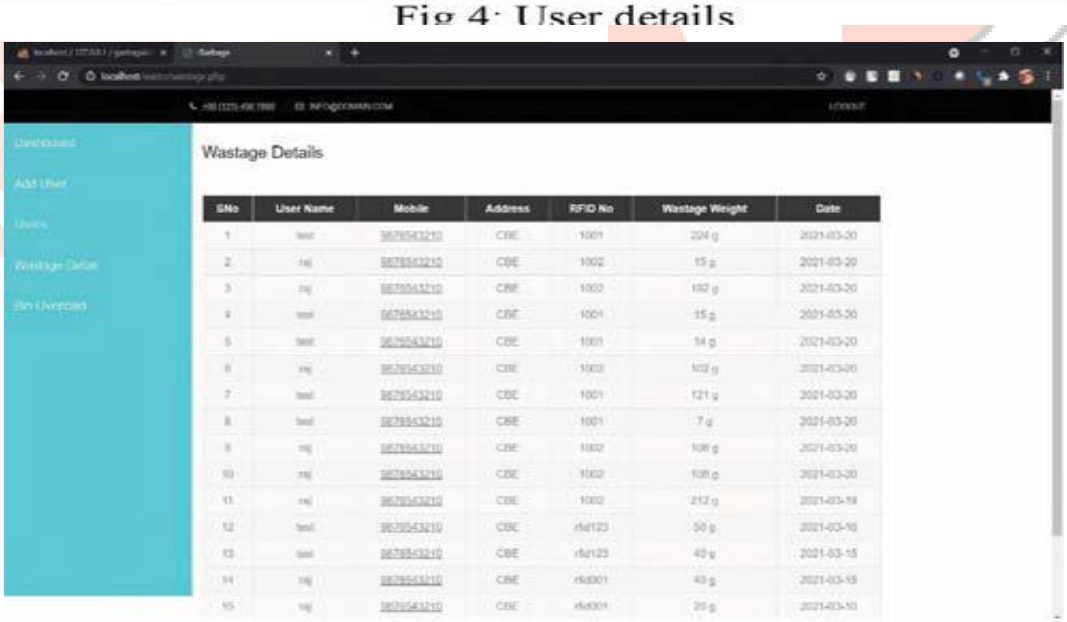


Fig 5: Wastage details

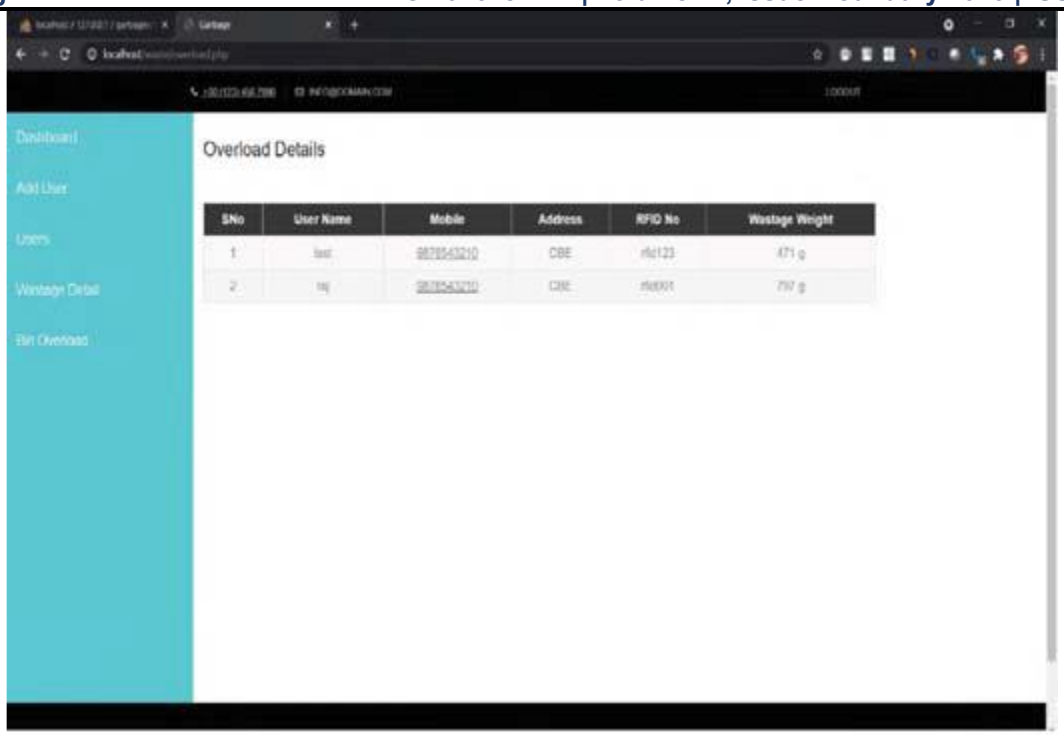


Fig 6: Overload details

Fig 7: Project hardware and webpage

CONCLUSION

Through this paper, we can inspire people to do what they need to do Amount of food that can reduce food waste. Of Proposals utilizing cloud computing and IOT sensors Implement only in facilities with RFID cards This saves you money as well as money create personal administrative records, which They have a large impact on individual food surpluses Working environment, we propose the following Improvements allow restaurants, hotels, Schools, colleges, technology parks, party rooms, etc.

References

[1].Tejashree Kadus, Pawankumar Nirmal, and Kartikee Kulkarni, "Smart Waste Management System using IOT," International Journal of Engineering Research and, vol. V9, no. 04, May 2020

[2]. A. Haldorai and A. Ramu, "Security and channel noise management in cognitive radio networks," Computers & Electrical Engineering, vol. 87,p. 106784, Oct. 2020. doi:10.1016/j. compeleceng.2020.106784

[3]. Zeinab, Kamal Aldein Mohammed, and Sayed Ali Ahmed Elmustafa. "Internet of Things applications, challenges and related future technologies." World Scientific News 2, no. 67 (2017): 126-148.

[4]. A. Haldorai and A. Ramu, "Canonical Correlation Analysis Based Hyper Basis Feedforward Neural Network Classification for Urban Sustainability," Neural Processing Letters, Aug. 2020. doi:10.1007/s11063-020-10327-3

[5]. A. Parashar and A. Parashar, "IoT-Based Cloud-Enabled Smart Electricity Management System," Smart Innovation, Systems and Technologies, pp. 755 766, Oct. 2019.

[6]. H. Anandakumar and K. Umamaheswari, "A bio-inspired swarm intelligence technique for social aware cognitive radio handovers," Computers & Electrical Engineering, vol. 71, pp. 925-937, Oct. 2018. doi:10.1016/j.compeleceng.2017.09.016

[7]. S, D., & H, A. (2019). AODV Route Discovery and Route Maintenance in MANET s. 2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS). doi:10.1109/icaccs.2019.8728456

[8]. Soman, Rajashree & Shah, Pritam. (2018). Security Model for InternetofThingsEndDevices.10.1109/Cybermatics_2018. 2018.00066

[9]. H. Anandakumar and K. Umamaheswari, "An Efficient Optimized Handover in Cognitive Radio Networks using Cooperative Spectrum Sensing," Intelligent Automation & Soft Computing, pp. 1-8, Sep. 2017.doi:10.1080/10798587.2017 .1364931

[10]. K. F. Haque, R. Zabin, K. Yelamarthi, P. Yanambaka, and A. Abdelgawad, "An IoT Based Efficient Waste Collection System with Smart Bins," 2020 IEEE 6th World Forum on Internet of Things (WFIoT),Jun. 2020.

[11]. A. Haldorai and A. Ramu, "Canonical Correlation Analysis Based Hyper Basis Feedforward Neural Network Classification for Urban Sustainability,"
Neural Processing Letters, Aug. 2020. doi:10.1007/s11063-020-10327-3

[12]. . Pavan Manjunath, Pritam Gajkumar Shah, IOT BasedFood Management System, Web Publication, https://Ieeexplore.ieee. org/document/903253.

[13] . D. Misra, G. Das, T. Chakrabortty, and D. Das, "An IoT-basedwaste management system monitored by cloud," Journal of Material Cycles and Waste Management, vol. 20, no. 3, pp. 1574-1582, Mar. 2018.