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Effective Utilization and Management of Left over Food

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ABSTRACT: An important goal in our world today is to eliminate food waste by reusing food sources in the local community: restaurants, grocery stores, and food distribution centres have expired food products; and perishable items that are not fully used in the desired period. This article focuses on creating interesting mobile applications. (application), an application that provides a ubiquitous platform where users can visualize food resources available in their local area and ultimately provide access to food, hunger, and food waste. This program is relevant to the UN SDGs (United Nations Sustainable Development Goals) and fits into the general area of AI for smart living in smart cities. A rapid and gradual increase in food waste can be seen in recent years. According to the Food and Agriculture Organization (FAO), a third of the food produced by humans is consumed, about 1.3 billion tons per year worldwide, while on the other hand, twenty percent of people, according to a report by the World Health Organization, are eating during food shortages. This web-based application helps collect food from donors and distribute it to those in need. This is the main concept and main goal of this project.

I. INTRODUCTION

Food waste or food waste is food that is not served in restaurants. The cause of food waste occurs in various stages of production, processing, retailing and even consumption. Many people consume a lot of food because of the convenience of food. On the other hand, there are people who do not get food for the day. So, you should be concerned about it. Waste is transported and disposed of improperly, causing damage to health and the environment, which costs the government a lot of money without much impact. In this study, we propose to design and implement an effective food waste management system based on a mobile application. Optimizing distribution and storage in developing countries, and providing better consumer data to others, can solve this problem. Another option is to distribute unused food. Food can be donated to charities or community organizations that will help those in need. Food waste is a huge problem and one of the most neglected things in the world today. Some restaurants/cafes have a no-food policy from the day before, even if they offer great food. All this is thrown away as "garbage" at the end of the day. Therefore, the program offers a way to bridge the gap between waste and deficit by allowing restaurants to donate food to community organizations.

On the other hand, it is difficult to provide food to the needy when so much healthy food is wasted in restaurants every day. Today almost everyone has an android phone. So, this android app will help them through grocery shopping. food waste has become overwhelming. This is a difficult problem today. NGOs can contact food donors for food so that poor people can eat at least twice a day. The program has a user-friendly interface, so everyone can use it efficiently. Using the prediction algorithm, it is possible to predict how much food is wasted on the appropriate day of the week. Therefore, only a large amount of food can be prepared. All nearby community organizations can be notified if additional food is available. In this way, food items can be shipped from the donor to the recipient using a third party vendor. Therefore, using this program, the problem of food waste can be reduced to such an extent that everyone gets twice a day. So we can at least try to be a good cause for our society. We must try to reduce this problem before it leads to more deaths due to starvation. Food waste causes economic and other costs, leading to efforts by the public and private sectors to reduce food waste in the supply chain. Efforts should be made to tackle food waste.

II. RELATED WORK

1) Food Donation Portal

In 2017, Naman Talati et al. [1] He explained that food donations, which continue to be included through research, are seen as the chosen target for urban mining, because food is returned to its original purpose - human consumption. There are many projects carried out around the world, but due to the lack of information, the scientific literature on food donation provides links between donors and NGOs. An overview of the food donation system is presented and its impact on society is discussed at this link. The problem of food consumption has increased in the last few years. This study was conducted with the aim of reducing food waste. In this article, we will introduce you to the food donation portal. This portal connects two people; one group has surplus food and the other group needs food. The program has been developed so that people can donate food items according to their money, and also allows organizations to send requests for items. If any institution wants to donate, they can apply and send a message. This message will be displayed as a notification to other users (HDDG) in the donation application. After the message is sent, the orphanage that wants to request a donation can reply and contact the donor. Thus, this portal can help reduce many problems related to food waste. The benefits are reduced food waste and faster and more efficient food delivery. It will help thousands of people who are starving. You need an uninterrupted connection to track your destination accurately.

2) Beyond Food Sharing: Supporting Food Waste Reduction with ICTs

In 2016, Aaron Ciaghi et al. [2] Through his research, he explained that even though there is a lot of charity, a lot of food is wasted. In Europe/NA, about 280-300 kg per person per year is wasted. A group of food products and resources that require significant energy. Food waste can deplete a country's economy to a degree that most of us don't even realize. If food is wasted, the food processing industry uses more water in agriculture, labour and electricity than we can think of. It investigates and evaluates the availability and effectiveness of ICT-based tools and smart technologies available for food management and consumer waste reduction. As a result, consumers are interested in programs that help reduce food waste. So we take care of it. This article contains innovative ideas and technologies for food waste management. Recovery rates are found for different food wastes and different results are found. They introduced a device that measures food waste. They developed a website that connects food donors with charities. Various charities use it to reduce food waste.

3) Food Wastage Reduction through Donation using Modern Technological Approach: Helping Hands

In 2016, Komal Mandal et al. [3] Through his research, he explained that India is a country with a high economic status, where tons of food products are thrown away as waste at every stage of marketing. Food waste accounts for about 25% of the food consumed. Prevention of food waste can be done by contributing to saving resources and reducing the environmental impact at all stages of the marketing system. No one wants to waste food in the first place, some conditions in marketing behaviour and personality lead to food waste. Food waste is a problem that must be reduced until everyone can enjoy two meals a day. In this article, we introduce a web-based Android Application that helps you solve this problem. Organizations can register in the system and submit item requests. Prospectors can view a list of items donated by donors and, if necessary, contact donors to claim donated items. However, this app is limited to Android Smart phones with Gingerbread OS and higher versions. Also, the program will benefit if donors and seekers are close. There are 3 actors in the program: - Donor, recipient, and administrator. The donor can see the recipient's location, and the recipient can see the donor's location if delivery is needed. The main goal of the proposed application is to reduce food waste and provide food to nursing homes, nursing homes and similar organizations. This saves a lot of time and even reduces the number of deaths due to starvation. The only problem is that the app only works on android devices older than 2.3.7, which is not a concern.

4) A Methodology for Sustainable Management of Food Waste

In 2016, Elliot Woolley et al. He explained that the most useful waste management alternative for food waste management is based on economic considerations and the availability of waste management facilities. In addition, the legislation defines a range of solutions that can be used to manage different food wastes, and therefore decisions often only consider a few alternatives. This paper attempts to incorporate environmental and social considerations into decision making so that more sustainable solutions can be achieved from possible forms of waste management. For this purpose, the research presented in this paper is organized as follows: first, the definition of food waste used in this paper is formulated; second, the previous categories of food waste are discussed; third, the categorization process based on the most relevant indicators for the classification of food waste is described; fourth, the various types of food waste that are identified are associated with the most appropriate waste management alternatives, forming the Food Waste Management Decision Tree; and finally, the process of categorization is illustrated by two examples from UK food industry.

5) Friendly Waste Segregation using Deep Learning

In 2016, S. Sudha et al. Through his research, he revealed that the garbage disposal system in India is done manually to separate the waste. It can even cause a variety of diseases and ailments. Therefore, the purpose of this paper is to bring an automatic process for waste separation. The idea is to identify and categorize waste that is thrown into landfills. Photos will be collected using a camera. They will be analysed and trained. Object detection will be implemented. Prediction will be based on identification and probability index. The object can then be biodegraded. The implementation is done using Caffe-Framework. The project served as a catalyst for population reduction and nation building and ecosystem restoration. Ideally, it separates the object into biodegradable and non-biodegradable forms and degrades some degree of contamination. The disadvantage is that it is dangerous in case of improper operation.

6) Predicting Sales in Food Store Department using Machine Learning

In 2017, Robert Siwerz et.al. explained in their research paper that sales forecasting is important in the food industry because it increases business and profits. Machine learning has been used to predict grocery store sales. It takes old data, studies patterns and predicts the outcome. Three different machine learning methods are used in this paper: - Multilayer Perception (MLP), Support Vector Machine (SVM) and Radial Basis Function Network. They used the Day of the Year, Day of the Month, Day of the Week, Holidays and Dept. functions. The price and tag used is the Sales Quantity. Two different forecasting measures are used: - Mean average percentage error. It was found that SVM recorded lower mean MAPE and RMSE than the other two methods. SVM is most accurate for forecasting format sales. Revenue prediction has been found to improve business operations and profits. The disadvantage was that the result was not informative if not enough data was given.

III. METHODOLOGY

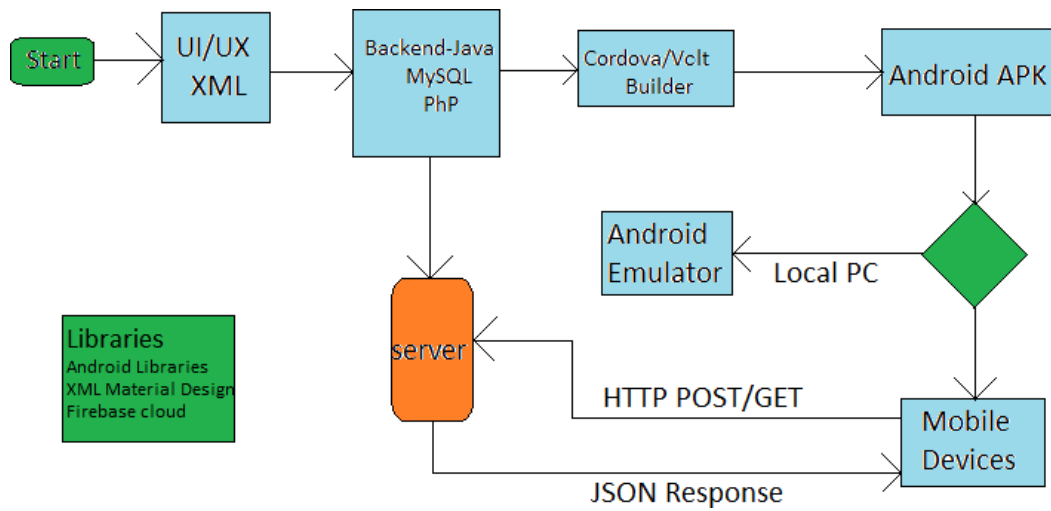


Fig:3.1 Workflow diagram for Android

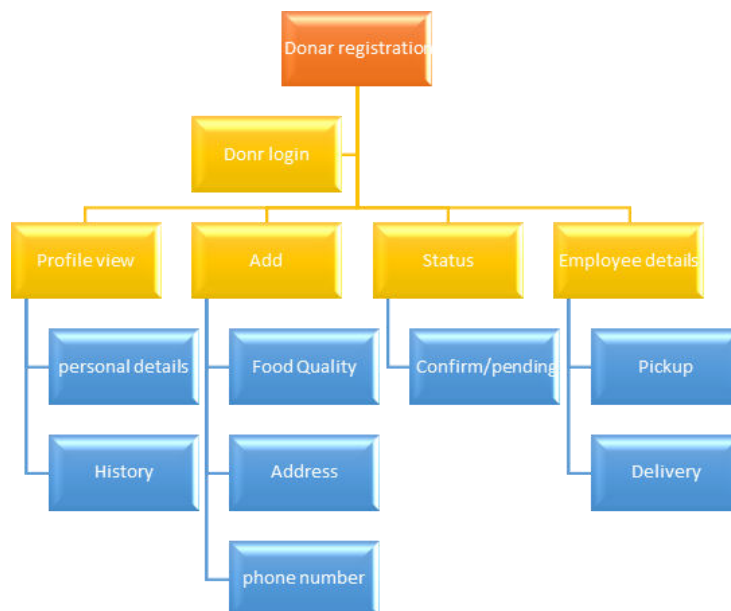


Fig:3.2 Donor system architecture.



▪ **Log in**

This is the login page of our Android app. The user can enter his credentials i.e. email and password and login application. If someone doesn't have an account in our app yet, they can also register.

▪ **Donate**

This android app will be used by restaurants. After logging in, they can submit a donation request by indicating description and amount of food available. This request will be sent to the browser side by our application.

▪ **Public Organizations (NGO's):**

Users will be redirected to the home page when visiting the website or registering. You can see the list of requests in order to see which restaurants are submitting food donation requests. The list of restaurants will be arranged in this order. Restaurants that are close to community organizations will be prioritized accordingly. Public organizations can accept applications location and needs. Once a request is accepted, it is removed from the request list.

▪ **Admin:**

Admins can access the list of social organizations. May include public organizations on our website. Users cannot access public organization lists. In the list of public organizations.

The page shows a list of social organizations associated with us. Details like Name, Address, Contact Number and Email shown. This page is not accessible to users. This is only available for administrators. This is because administrators can make sure that there are no fake social organizations. Only reliable social organizations can see that they are aware of this food donation. After an NGO joins our website, an email and password are sent to the NGO with which they can log in to our website.

▪ **View status:**

Restaurants can view the status of donation requests by selecting the View section in our app. If there is a social organization choose his wish, then he will appear in the restaurant. Organization Name, Contact, Address, Email, the amount of food and the type of food (eg rice) will be shown. He can also see the location of the community using Maps.

When the NGO receives a request, they update the restaurant through the app. After that, the restaurant can only communicate social organization and run a food delivery schedule.

IV. RESULTS

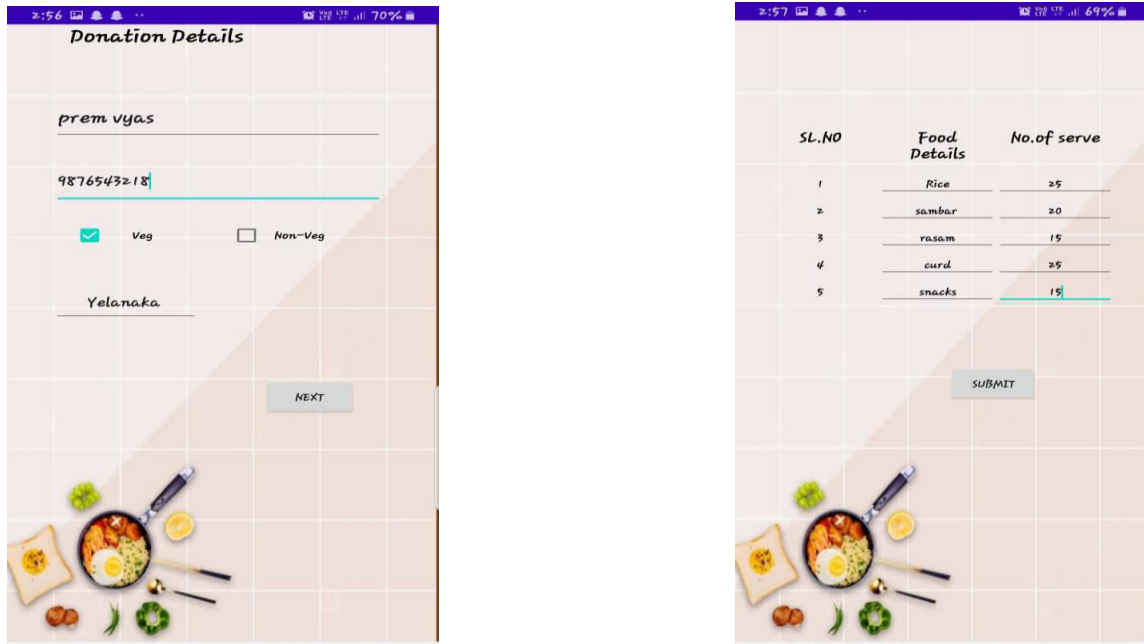


Fig 4.1 Donor interface which collects donation data from donor.



Fig 4.2 NGO's interface which shows donation data with location.

V. CONCLUSION

Our study investigated the problem of food waste, which has many spin-offs economic and social effects. However, food waste can be prevented or at least reduced using political rules and technology.

Mobile app technology is beneficial for food waste management. The aim of the application is to support better food management. Our proposed solution should reduce food waste by facilitating community food sharing using mobile technology. This work is the first step towards designing a better system to reduce everyday food waste.

In the food waste management system, we have a system where the donor requests that excess food or leftovers be collected by filling in the food details. An employee will be assigned by the NGO to pick up the order, who will pick up the order and deliver it to the right place. The delivered message is reflected to the donor.

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