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Help-Corner

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ABSTRACT

The proposed mobile app is intended to provide a solution to feed the homeless by gathering donors and distributors through an IOT device. The system is designed to facilitate the process of donating and distributing food in a practical and effective way. The mobile app will enable donors to save their contact information and make donations through the app. They can specify the type and amount of food they want to give, as well as the time and place of the gift. The system will then map the location of the donor with a nearby distributor who can collect and distribute food to the homeless. The IOT system will be installed at each distribution point to monitor the feed inventory and facilitate the distribution process. The device will provide real-time updates on food availability, and distributors can use the mobile application to request additional food supplies as required. The proposed system will tackle the current problems of food waste and hunger in society by providing a platform to facilitate the donation and distribution of food surpluses. The mobile app will also ensure transparency by enabling donors to monitor the state of their donation and distribution process. Furthermore, the system will foster social responsibility by engaging volunteers and organisations in the distribution process. In summary, the mobile application offered with IOT devices is a promising solution to solve the problem of food insecurity for the homeless.

Keywords: IOT, homeless people, donation, distribution, location tracking, gps.

I. INTRODUCTION

Homelessness is a global issue, and providing food for the homeless is one of the most pressing challenges in our society. To address this problem, a mobile app with an Internet of Things (IoT) device has been proposed. This system aims to facilitate the process of donating and distributing food to the homeless in a practical and efficient way. It allows donors to donate using the mobile app, specifying the food type, quantity, location, and time of donation. The system matches a donation with the nearby distributor, who collects and distributes the food to the homeless. IoT technology has been used to create a connection between the mobile application and distribution centres. This makes it possible to track donations and the distribution of food with real-time information. The system will also include features like donor and distributor registration and a reporting system for both parties, ensuring the process of food donation and distribution is efficient and transparent.

The mobile app enables donors to register their contact information and make donations via the app. The system is based on IoT technology, which involves connecting the physical devices to the Internet to enable remote monitoring and control. The IoT feature of this system will be used to track the location of food donation and distribution, ensuring that the process is executed effectively and efficiently. Overall, the IoT-enabled mobile app offers a promising solution to address hunger and homelessness. By leveraging technology, the system can bring together the donors and the distributors to work towards a common goal of feeding the homeless and making a positive impact on the community.

II. LITERATURE REVIEW

This section reviews the research works carried out by different researchers that are related to the proposed work.

Chang-Hyun Park and Don Hyun Kim proposed an IOT based food distribution system. In this system, the authors conducted a pilot study to evaluate the system and found that it was effective in facilitating the donation and distribution of food for homeless people [1].

Jai-Kyung Lee and Seung-Hyun Lee proposed a system consisting of an IOT device that monitored the food inventory at restaurants with food rescue organizations. The authors conducted a pilot study to evaluate the system and found that it was effective in reducing food waste and providing food for homeless people [2]. P. Kumar et al proposed a system called “**Smart Food Donation: An IOT based system for food waste reduction**”. The author proposed an IOT based system that connects donors with local food banks and charities to reduce food waste and provide food for those in need [3].

R. Saha et al proposed a system called “**IOT enabled smart food banks for hunger relief**”. In this system, the author describes an IOT based system that enables smart food banks to efficiently distribute food to those in need by tracking inventory levels, managing food expiration dates, and optimizing distribution routes [4]. **Jaeseok Yun and Sangwon Jeong** proposed the IOT based smart food delivery system for homeless people. The system consisted

of an IOT device that monitored the food inventory at the distribution points and a mobile application that connected donors and distributors. The authors conducted a simulation study to evaluate the system and found that it was effective in reducing the waiting time for homeless people to receive food[5].

Hyunsung Kim and Seunghyun Lee proposed the system “**Smart Distribution System for Food Donation Management**”. The system consisted of an IOT device that monitored the food inventory at donation points and a mobile application that connected donors and distributors. The authors conducted a field test to evaluate the system and found that it was effective in increasing the efficiency of food donation management[6]. “**An IOT based for monitoring and managing food waste**” by **Asif Khan et, al.** In this paper, the author suggests that the IOT based system that monitors food waste in restaurant setting, and provides real time data for efficient management of food waste. The author suggest that this system can be adapted for use in food donation and distribution context, where the system could help to minimize food waste and improve the efficiency of food donation and distribution [7].

“**Feeding the Hungry: A Collaboration mobile application for food donation and distribution**” by **Shubashree Sengupta et, al.** In this paper, the author proposes a collaborative mobile application for food donation and distribution that connects donors, volunteers and distribution centers. The author suggests that the mobile application can improve the accuracy, efficiency, and transparency of food donation and distribution process, and encourage more people to participate in the cause [8]

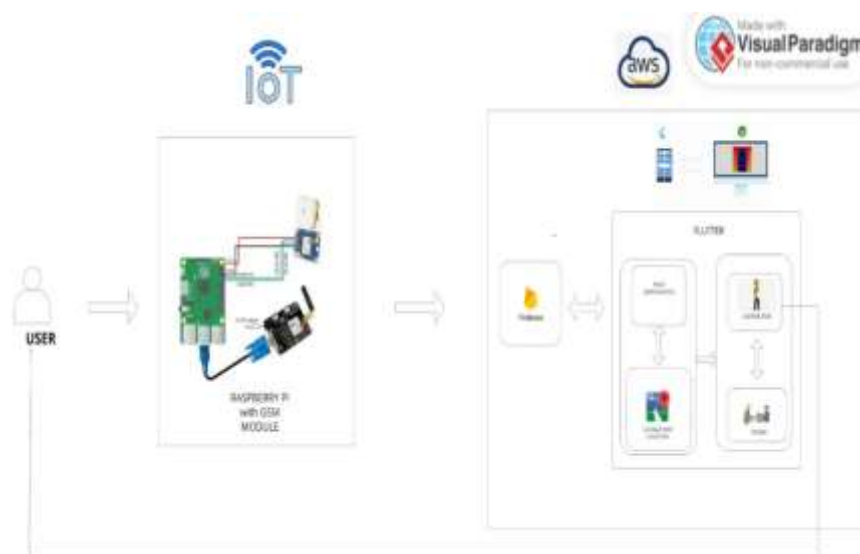
III. PROPOSED SYSTEM

Our proposed system consists of an IOT device acts as a core component which is integrated into the mobile app. The device is made up of components such as ESP-12E WIFI , GPS module. The primary use of this device is that it sends a notification message with latitude and longitude, each time the homeless push the button for food. As a result, it will be easier to find and feed people who need it.

ADVANTAGES

1. Real time location information.
2. Immediate response for the homeless with food.

IV. ARCHITECTURE DIAGRAM



IV. TECHNOLOGIES USED

ESP-12E WIFI module

ESP-12E WiFi module is developed by Ai-thinker Team. core processor ESP8266 in smaller sizes of the module encapsulates Tensilica L106 integrates industry-leading ultra low power 32-bit MCU micro, with the 16-bit short mode, Clock speed support 80 MHz, 160 MHz, supports the RTOS, integrated Wi-Fi MAC/BB/RF/PA/LNA, on-board antenna. The module supports standard IEEE802.11 b/g/n agreement, complete TCP/IP protocol stack. Users can use the add modules to an existing device networking, or building a separate network controller. ESP8266 is high integration wireless SOCs, designed for space and power constrained mobile platform designers. It provides unsurpassed ability to embed Wi-Fi capabilities within other systems, or to function as a standalone application, with the lowest cost, and minimal space requirement. ESP8266EX offers a complete and self-contained Wi-Fi networking solution; it can be used to host the application or to offload Wi-Fi networking functions from another application processor.

NEO-6(GPS.G6-H-W-09005)

The NEO-6 module series is a family of stand-alone GPS receivers featuring the high performance u-blox 6 positioning engine. These flexible and cost effective receivers offer numerous connectivity options in a miniature 16 x 12.2 x 2.4 mm package. Their compact architecture and power and memory options make NEO-6 modules ideal for battery operated mobile devices with very strict cost and space constraints. The 50-channel u-blox 6 positioning engine boasts a Time-To-First-Fix (TTFF) of under 1 second. The dedicated acquisition engine, with 2 million correlators, is capable of massive parallel time/frequency space searches, enabling it to find satellites instantly. Innovative design and technology suppresses jamming sources and mitigates multipath effects, giving NEO-6 GPS receivers excellent navigation performance even in the most challenging environments

AWS SQS SERVICE

Amazon Simple Queue Service (SQS) is a fully managed message queuing service provided by Amazon Web Services (AWS). SQS is a reliable and scalable messaging service that enables decoupling of components within distributed applications, allowing them to communicate with each other in a scalable and fault-tolerant way

AWS EC2

AWS EC2(Elastic cloud) service is used to create the instances which is needed for the application. EC2 instances are available in a variety of configurations, including different CPU, memory, and storage options, and can be launched in different regions around the world. You can choose an instance type that best matches your workload needs, whether it's a general-purpose instance for running a web server or a compute-optimized instance for running scientific simulations.

FLUTTER

Flutter is a mobile application development framework developed by Google that allows developers to build high-performance, cross-platform mobile apps for iOS and Android using a single codebase. In this application, Flutter can be used to develop the mobile app that Donors and Distributors use to view the location of homeless people and coordinate food delivery. It is used to provide the push notifications to the distributors which is help to acquire the location of the user. Through the mobile app, the distributor creates the quote form and sends that to all the nearby donor. Those who are willing to donate the food, will accept the form and the donor's locations can be etch by the distributor through the app. With the help of this app, the distributor will collect food from the donor and distributes it to the user.

SPRINGBOOT

Springboot is used as a backend to write the rest api. Spring Boot is an open-source Java-based framework that is designed to simplify the development of stand-alone, production-grade_Spring-based applications with minimal configuration. It is built on top of the popular Spring Framework and provides a comprehensive set of features for developing web and enterprise applications. In this application, an api is written to fetch the details of the selected users.

V. IMPLEMENTATION AND RESULTS.

The implementation consists of list of modules.

- IOT device location tracking
- Location details to connected users
- Donation phase
- Distribution phase

IOT DEVICE LOCATION TRACKING:

Once the buzzer pressed in the IOT device, the device will fetch the current user's location. The details pushed into the server and got saved. The IOT device not only fetches the user's current location, it also mentions the next step. The next step defines the process flow In the application. In this case, the next step refers to the distributor, they are the one who collects and distributes the food from donors to the homeless people.

LOCATION DETAILS TO CONNECTED USERS:

The users register their account in the application. We will write an API call , which is sued to gather all the distributors whoever stays nearby to the device's location. When the homeless people press the buzzer, the iot device sends the details to the server. After that , an API call will fetch the nearby distributors surrounding the device's location and sends the push notification to all the distributors. Once the distributor gets the device's location, he will undergo a manual check process. After the manual check, the distributor will create a quote form where he enters the quantity of food needed along with the location and sends that to the server.



Create Account

User type

Select your location

Already have an account? [Login](#)

PROFILE PAGE



Columns

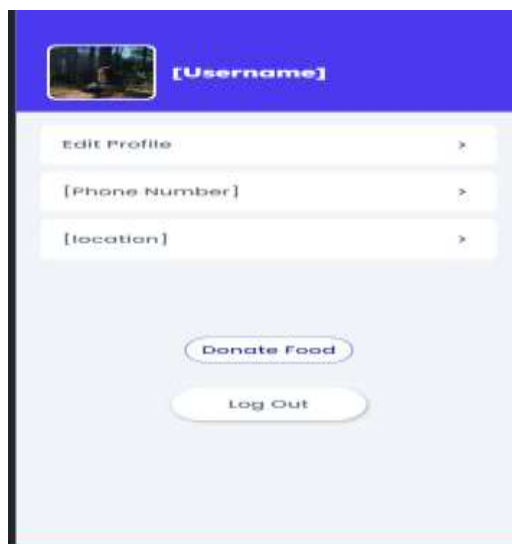
 **[Username]**

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DISTRIBUTOR PROFILE



Columns

 **[Username]**

>

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DONOR PROFILE

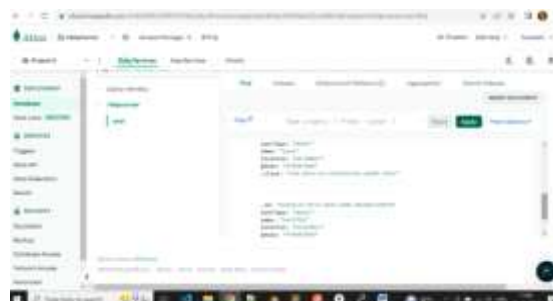
QUOTE FORM

DONATION PHASE

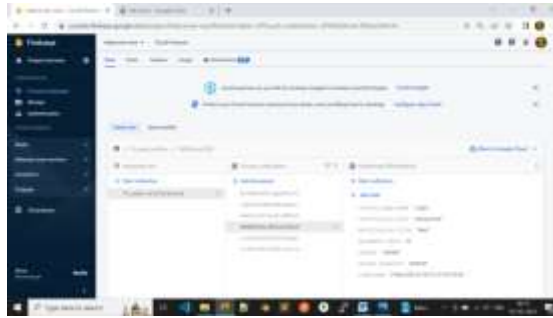
We will fetch all the donors who are nearby to the device location and send this quote form to them through an API call. The donors who are interested to donate food will accept the quote form and enter their details with the amount of food willing to donate. The details of the donors such as their contact details and location will get saved in the server. After that, the accepted donor details will be send to the distributor.

5.2.4 DISTRIBUTION PHASE

The distributor will get the details of the accepted donors and reach their location to collect the food. After that, he will reach the device’s location and donate the food for the homeless people



STORING THE USER'S DATA



NOTIFICATION FROM APP TO DATABASE

VI. CONCLUSION

This application is a solution to help alleviate hunger and provide food for homeless people. It has the potential to make a positive impact on society by providing a simple and effective way to distribute food to homeless people. By using technology to address this important social issue, we can work towards a more equitable and just society.

VII. FUTURE ENHANCEMENT

The application could be enhanced to include biometric identification, such as facial recognition or fingerprint scanning, to ensure that food is distributed only to verified recipients.

RFID tags: Homeless people could be issued RFID tags that can be scanned by the IOT device when they press the food request button, providing a unique identifier that can be used to track food distribution and prevent fraud.

VIII. REFERENCES

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