

Android Application for Notifying Leftover Food

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Abstract -- Most of us throw away leftover food from our households in dustbins. However, this leftover food can still be used to satisfy hunger of many underprivileged people. This paper presents a software solution to help notify available leftover food from our households. Our goal is to develop an Android application to allow willing food donors to notify availability of leftover food through Google Maps API. If a donor intends to donate left over food, the application will record his/her pickup location (i.e. in the form of <latitude, longitude> through GPS). Once the pickup locations of donors are recorded in database, we can plot them on Google Maps API in the form of markers. This marked map can then be used by various NGOs to collect leftover food from their respective destinations and then distribute it among underprivileged people.

Index Terms -- Android, Google Maps, latitude, leftover food, longitude, NGOs.

I. INTRODUCTION

In a heavily populated country like India, food wastage is a disturbing issue. India's global hunger ranking is 67[1]. Areas where standard of living is high are the main sights from where a lot of leftover food is expelled.

This food can surely be used to meet the hunger of many poor people. Collaboration with different NGOs will help us serve the community in a better way. Building a platform to establish the link between NGOs and the food donors in the most efficient and easy way is a primary goal. Thereby, an Android application has been developed through which people can donate food items instead of throwing the food into the trash. Presently, to reduce the wastage of leftover food many NGOs like

feedingIndia, Samarpan, Rotibank, Arham Yuva Group[2]etc. are working to collect and distribute it among needy people.

The system that most of the NGOs are currently using is a helpline based system. The donor has to call the NGO on their respective helpline number and notify availability of food. The NGO records donor's address. Using this address they go out to spot the donors and collect leftover food from them. Since the amount of food collected from households is in very less quantity, the NGOs usually give priority to requests from places like hotels, banquet halls, auditoriums from where more fruitful collection can be made.

II. DRAWBACKS OF CURRENT SYSTEM

The current system is only enough if the donors are fixed and the number of donor requests are less. Spotting and navigating through large number of donors will not be feasible just by using donor address. Moreover proper planning of journey for NGO vehicles will not be possible. As the NGOs are not very heavily funded, it will be better if they can plan their journey well in advance and spend less on fuel. This is the problem that this product has tried to tackle.

III. SUGGESTED IMPROVEMENTS

Using GPS location of donor to set pickup location instead of his/her address and plotting them in the form of markers on google maps API. This will facilitate NGO vehicles to track donors easily. Feature of heat map to find areas with high density of donors.

IV. PROPOSED METHODOLOGY AND IMPLEMENTATION

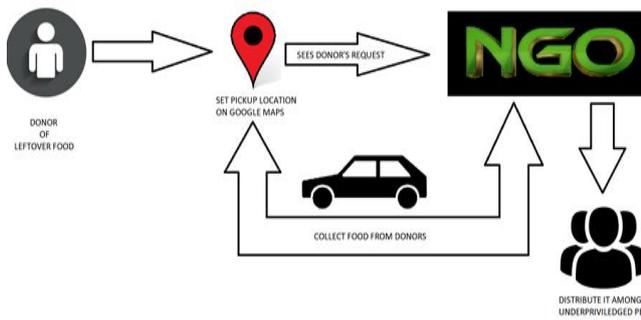


Fig.1 : System flowchart

The system will have two user interfaces:

1. Donor’s side.
2. NGO’s side.

On donor’s side we have the android application that help to track donor’s current GPS location. While on the NGO’s side we have the Database which is used to plot markers on Maps.

NGO will have to incur the cost of outsourcing vehicles and volunteers to collect leftover food from donors and distribute it among underprivileged people.

In order to reduce the cost of transport there is a feature of “HeatMaps” that indicate the region on map with high density of donors. This will help NGO to make an informed choice about the count of vehicles to be outsourced based on the concentration of donors.

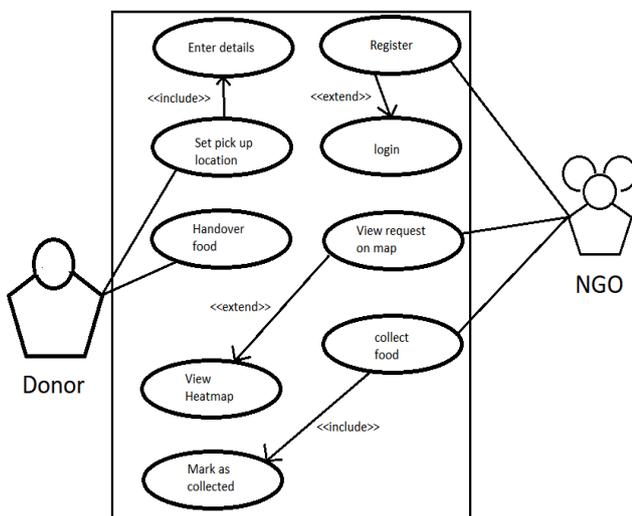


Fig.2 : Usecase diagram

The process of donation starts from donor notifying about leftover food using this app. The app will first record donor’s current GPS location, his/her name and contact number. GPS provided values of latitude and longitude take a long time to be fetched. Hence, network provided values are used to track donor’s pickup location.

The code for seeking current GPS location involves use of LocationManager class in Android

Studio[3][5]. This information will be stored in NGO’s database. Screenshots of the app are shown in (Fig. 3).

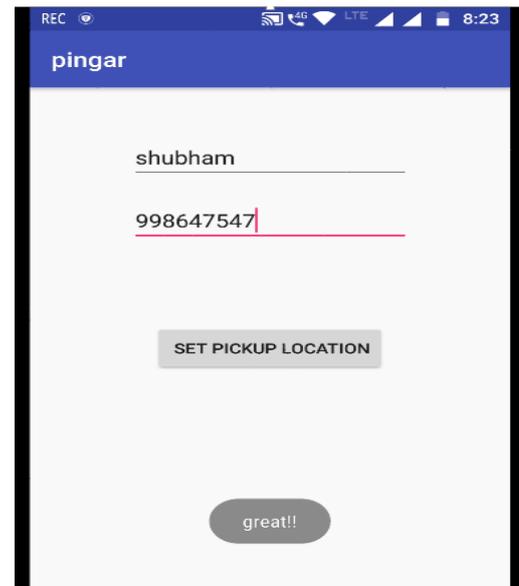


Fig. 3 : App Screenshots

Using these records, markers will be plotted on google maps API which can be seen by NGO vehicles. The attribute COLLECTION_STATUS(Fig. 4) is used to signify the collection status of donor on google maps API. Donors who haven’t been serviced yet will be plotted with a bouncing markers. Once the ngo reaches the donor and collects food, they will update the collection status of donor and the corresponding marker will stop bouncing. This will help the NGO to differentiate between serviced and unserved donors.

The Date_of_req attribute is used to make sure that only donors whose request has come on the present day are plotted on Google Maps API. The REQUEST_ID is used to identify each donor request uniquely while updating his/her collection status.

NAME	REQUEST_ID	lat	lng	COLLECTION_STATUS	CONTACT_NO	Date_o
shubham	44	19.012592	72.842316	1	998647547	2017-11

Fig. 4 : Database Schema

In order to access and use GoogleMaps JS API, the developers first have to get an API key for their project [6]. The initMap() method is used to initialize the map and provides facility to :

- Set map center
- Set zoom
- Add eventListener for infowindow.

On clicking the marker on Google maps API, an infowindow will pop up displaying details about the corresponding donor like donor’s Name, Request ID and Contact No(Fig. 5). which will be helpful while updating collection status.

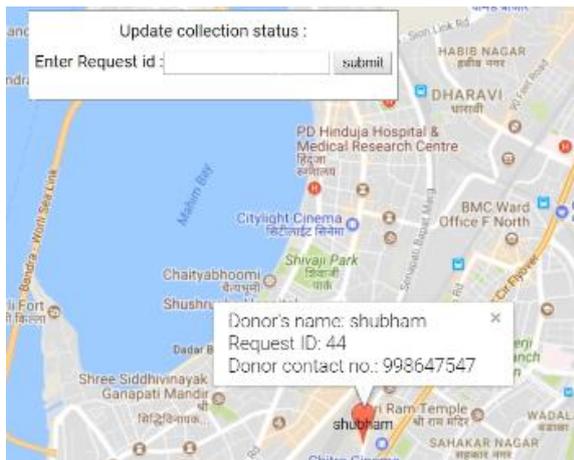


Fig. 5 : NGO's interface

Fig. 5 shows map after plotting marker along with a floating panel to update collection status. On clicking the marker on Google maps API, an infowindow will pop up displaying details about the corresponding donor like donor's Name, Request ID and Contact No. which will be helpful while updating collection status.

Fig. 6 shows heatmap conveying concentration of donors in specific regions. Colours with various shades of green, yellow and red are used to signify intensity in heat map[7].The heat map can be adjusted to show intensity based on either current day's requests or historical requests. This will make visualization of historical data possible.

Here the green colour suggests low concentration of donors, yellow suggests medium concentration and red suggests high concentration of donors in that area. Places without any stains of these colours signify areas from where no donor requests have come. Heat maps will come in handy in situations where the NGO vehicles have to decide which region on map should be prioritized for collection process to be more efficient.

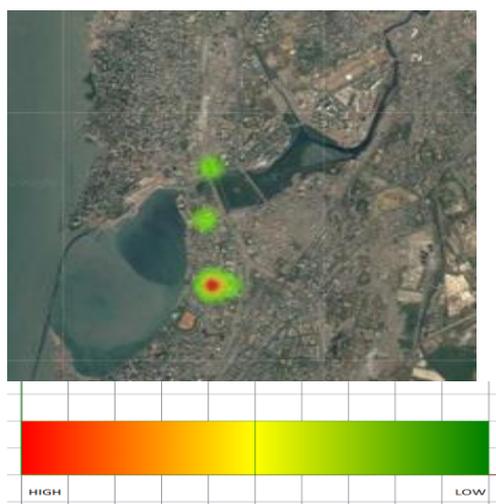


Fig 6 : Heatmap

V. ADDITIONAL FEATURE

This feature will try to increase the magnitude of collection. This will be done by alerting past donors who have unintentionally failed to notify available leftover food. System will generate a report of donors along with their contact no. who have donated previously but haven't requested to donate on the present day. Reminders can be sent to such donors in the form of SMS or through app notifications.

VI. CONCLUSION

The proposed system shall reduce wastage of leftover food and provide an environment for its easy donation and collection in the following ways:-

- Google Maps makes it easy to locate donors and helps NGO in planning their journey well.
- Knowing Intensity of Requests in particular region using heatmaps can help save vehicle fuel.
- System facilitates NGO to remind past donors for donation, thus increasing their magnitude of collection.

However, this system doesn't provide any facility to check quality of donated food.

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