

# An Android Application on Food Salvage

Hema Sowjanya Mamidi, Sai Divya Moguloju, Bhanu Sucharitha Kotha, K. Suvarna Vani

**Abstract:** *The world is facing food crisis and many people are dying due to lack of proper food a day. Around 1,00,000 weddings, Family Functions, social events are held in our country every day. In every Indian wedding, food is the most important part and the most wasted too! About one-fifth of the food served at weddings and social gatherings is discarded. The food being wasted on each and every day at weddings and family functions in many places in cities would be enough to feed the city's vast slum population. Moreover, there are many people across the country who are not even getting two meals a day and yet many are literally starving or begging for alms. Hence, it is better to distribute the excess food to such people who are in need of it instead of throwing the foods in the dumpsters. This is where our app comes into play. Our platform provides a way for each person willing to help to contribute in a way to those needy people. It also provides people who want to share and provide information about the possibility of available food helping those in need. The donor needs to post the image and other required details for contact. Then the receiver or the NGO people can claim the food. Whenever a person claims the food notification will be sent to the donor. Then the receiver and the donor can contact with each other so that the receiver can take the food. We help people to locate surplus food spots and hunger food spots. So that they can refer to the locations while donating.*

**Keywords:** *Android, Java, Images, Storage, Firebase, Food wastage, Authentication.*

## I. INTRODUCTION

Food Salvage is an application which is used to connect the hunger and the donor and is helpful to reduce the deaths caused due to lack of food. We must stop wasting food and use this food to feed the hungry. Every day a lot of food is being dumped into the dumpster which is not useful to anyone. So proper management of food leads us in serving the hunger and people with no food. Now-a-days food is being wasted in large quantities but there is no appropriate application for donating food to the hunger. Many applications came up and there are food rescue numbers governed by government bodies even though surplus food is not made available to the hunger. and is being wasted.

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So we came up with an idea of developing a food salvage application which is used to connect the hunger and the donor. It is useful for rescuing the food which is going to be wasted and helpful for the hunger and saves many lives. Food Salvage Application is to prevent food wastage and help the hunger. Our main motive is to share surplus food and save lives. Food wastage can be avoided using food salvage app which helps the alms. The donor can post the image of the food which they wanted to donate or if anyone who is using the app find the food wasted can post the information.

## II. RELATED WORK

Several applications have been developed for reducing the food wastage and to help the needy. A Mobile phone application has been developed to reduce food wastage named "Food Reduction App" [1] Ayesha Anzer et al developed an android application and included Image processing Algorithms for Food Wastage Management. Divyesh Jethwa et al proposed a Food donation portal which is an internet-based application that comes up with a platform for donating the excess food to the needy people/organizations [2]. Nandini H Jadhav et al has proposed an application to reduce food wastage through donation in which they developed Food cloud application which connects these NGO and Donor with a specific end goal to give the sustenance to the poor individuals [3]. Rucha Jadhav et al proposed a System to reduce and manage Waste Food by providing an application is to connect the hotel with a third party such as NGOs that can accept the extra prepared food as Donation and provide food to the needy[10]. R.Adline Freeda et al proposed a Mobile Application for Excess Food Donation and Analysis which reduces the amount of food wastage produced in restaurants, functions and mess. The current system only provides information on amount of food wasted and does not provide an interface to donate and provide data analysis. Using data analysis, to visualize the impact[11].

## III. METHODOLOGY

The user needs to login into the app to donate or to share food. So after logging into the app we get a home page where the user can see the posts related to excess food. To share the food the donor needs to give his details and also the details related to the food and then click on donate. Then the post appears on the home page and if the receiver wants to get the food he can enter the city name in which he is located and then search the related posts appear. So based on the receivers requirements he can accept the food from a donor. By clicking on the posts the details of the food will be shown and the by clicking on "Get food" button an alert will be sent to the donor that a person is requesting for his food.



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Then the two people can contact each other and then the donor can share his surplus food to the receiver. The donor can also search the nearby “Hunger Food Spots” like orphanages and old age homes where the donor can go and donate the food himself/herself. For locating the

## A. Algorithm

We are using Google Places API for locating the nearby orphanages and old age homes to donate the food by the donor. Google indexes its spatial and geographical data using S2 cell.

S2 cell hierarchy:

- Enough resolution for indexing geographic features
- Compact representation of each cell
- Fast methods for querying with arbitrary regions
- All cells at a given level should have similar area.

Google uses A\* Algorithm for finding the shortest path and alternative routes in real time. A\* algorithm is an advanced form of breadth first search. It avoids costly path and choose the most promising path. It is very smart algorithm. It is used approximate the shortest path in real life situations, like in maps. It is formulated in terms of weighted graphs in case of Google map this weight is travel time.

Starting from a specific node(source node) of a graph, it constructs a tree of paths starting from that node, expanding paths one step at a time, until one of its paths ends at the predetermined destination node.

## IV. IMPLEMENTATION

### A. Database

There are two types of databases in Google Firebase. They are: Every user contains an unique id and then for that specified user we store the other details like name, email id, and default images as shown in Fig. 1.



Fig.1 User Information

- Cloud Firestore
- Real-time Database Cloud Firestore:  
Cloud Firestore is a flexible, scalable database for mobile, web, and server development from Firebase and Google Cloud Platform. Like Firebase Real-time Database, it keeps your data in sync across client apps through real

orphanages and old age homes we are using the Google Places API.

Google Places API: We need to generate the Server key using the Google API's. After generating the key we can use that for our project.

time listeners and offers offline support for mobile and web so you can build responsive apps that work regardless of network latency or Internet connectivity.

Real-time Database:

The Firebase Real-time Database lets you build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, real time events continue to fire, giving the end user a responsive experience. When the device regains connection, the Real-time Database synchronizes the local data changes with the remote updates that occurred while the client was offline, merging any conflicts automatically.

The Real-time Database provides a flexible, expression-based rules language, called Firebase Real-time Database Security Rules, to define how your data should be structured and when data can be read from or written to. When integrated with Firebase Authentication, developers can define who has access to what data, and how they can access it. The Real-time Database is a No SQL database and as such has different optimizations and functionality compared to a relational database. The Real-time Database API is designed to only allow operations that can be executed quickly. This enables you to build a great real time experience that can serve millions of users without compromising on responsiveness. The information related to the users, posts and the Food requests is stored in the real time database.

Authentication:

The user of the application should be logged in to donate the food or claim the food as shown in Fig. 2. So they need to create an account. For storing the information of the users we are using the Google firebase. Authenticate users with their email addresses and passwords. The Firebase Authentication SDK provides methods to create and manage users that use their email addresses and passwords to sign in. Firebase Authentication also handles sending password reset emails.

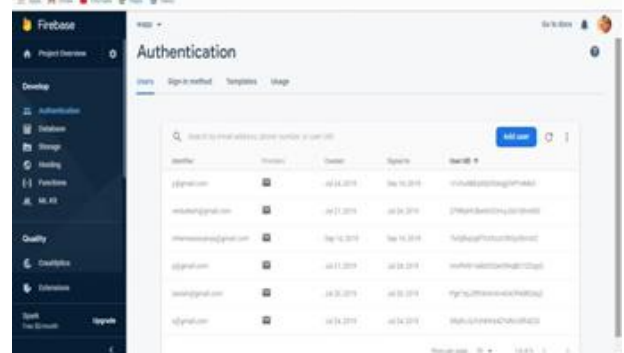


Fig. 2. Firebase Authentication

After logging into the app the user will see the home page where he can see the posts. The information related to posts is saved in the Real Time Database.

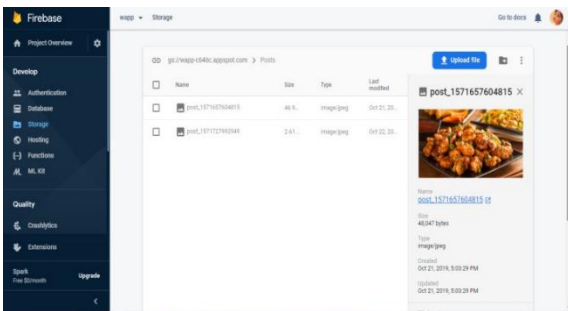


**Posts:**

For keeping a post the user needs to upload the image of the food and then give the corresponding details. The image uploaded is stored in the storage section of the Google Firebase.

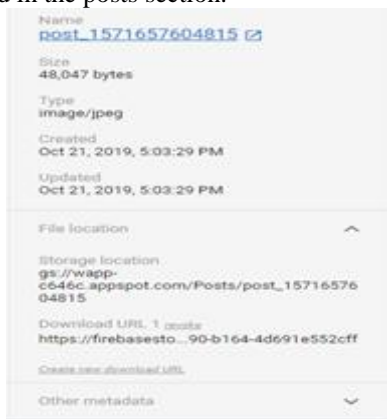
**Storage:**

Developers use the Firebase SDKs for Cloud Storage to upload and download files directly from clients. If the network connection is poor, the client is able to retry the operation right where it left off, saving your users time and bandwidth. Cloud Storage stores your files in a Google Cloud Storage bucket, making them accessible through both Firebase and Google Cloud. This allows you the flexibility to upload and download files from mobile clients via the Firebase SDKs, and do server-side processing such as image filtering or video transcoding using Google Cloud Platform. Cloud Storage scales automatically, meaning that there's no need to migrate to any other provider. Cloud Storage is used to upload files and also stores data on the Internet. It provides a feasibility to resume the operation where it is left. We can see how the images are stored in the storage and a link is generated the generated link is stored in the Posts reference of database as shown in Fig. 3. the details of the donor i.e the name of the donor, their address, City of the donor, their email id, user\_id and the timestamp.



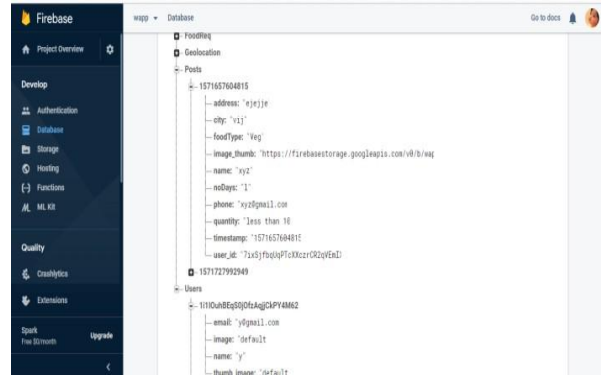
**Fig. 3. Firebase Storage**

In the storage section we get the details of the image uploaded as shown in Fig.4. Here we can see the size of the image, type of the image, when it is uploaded, location of the image and the download url. With the help of download url we can download the image from the browser. Then the link is stored in the posts section.



**Fig. 4. Image Details**

In the Fig. 5. we can see the image\_thumb which represents the image of the food and the other details like whether the food is vegetarian or non-vegetarian and number of people it can be served, how many days the food can last. It also gives



**Fig. 5. Image Thumb**

**Food Request:**

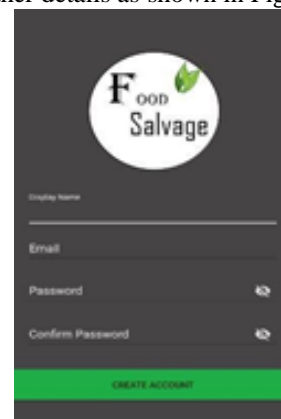
So, if a person wants to get the food the donor needs to know that a person wants his food as shown in Fig. 6. So alerts are used for this purpose. The person can send alert to the donor and the database structure is as shown below. Where top id corresponds to the donor and the bottom details correspond to the receiver.



**Fig. 6. Donor and Receiver Details**

**B. Application Implementation**

In this the user fills the details like name, email id, password and other details as shown in Fig. 7.



**Fig. 7. Registration Page**

This is the portal for food salvage application in which the posts done by the user are shown as shown in Fig. 8.



Fig. 8. Portal

The details given by the donor like name, mail-id, city, address, quantity, no of days the food can be preserved, veg or non veg as shown in the Fig. 9.

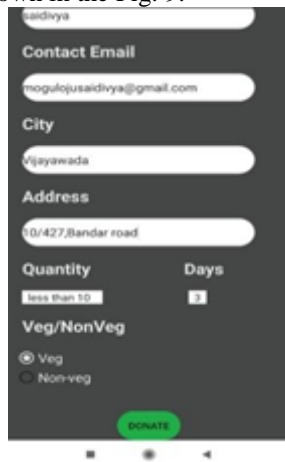


Fig. 9. Entering Donor Details

The details added by the donor gets updated in the portal as shown in the Fig. 10.



Fig. 10. Portal After Entering Donor Details

The details of the donar are displayed which contains information like image of the food which is ment to donate and other details as shown in the Fig. 11.



Fig. 11. Donor Details

The receiver is tends to receive then selects receive and the donor gets alerts as shown in Fig. 12.

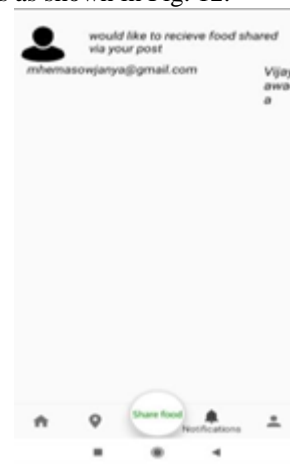


Fig. 12. Notifications

The hunger and the surplus spots are shown in the application as shown in the Fig. 13.



Fig. 13. Food Spots

The donor can locate the food spots of the hunger using GPS as shown in the Fig. 14.



Fig. 14. Hunger Food Spot

The hunger can also view the donor food spots as shown in the Fig. 15.



Fig. 15. Donor Food Spot

The user after using the application can logot of the application as shown in Fig. 16.

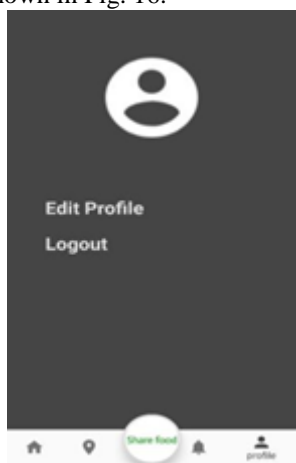


Fig. 16. Profile

The user can edit the details given in the change details

option given below the user details as shown in the Fig. 17.

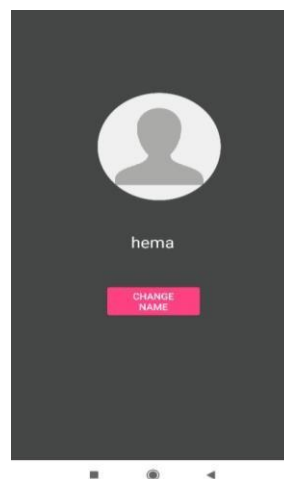


Fig. 17. User Details

## V. CONCLUSION

The aim of the project was to donate the excess food to the needy people. We implemented our app using the Android Studio and then using the Google Firebase as our backend. We can use the Google Places API for locating the hunger spots like orphanages or old age homes instead of manually adding those in the map provided in the app.

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