RECIPE MAKER APP
CSE 535: Mobile Computing

Amit Singh
MCS, CIDSE
Ira A. Fulton Schools Of Engineering
Arizona State University
asing227@asu.edu
1215163716

Aakash Rastogi
MCS, CIDSE
Ira A. Fulton Schools Of Engineering
Arizona State University
arastog9@asu.edu
1215964854

Sai Vinay Gangadharabhatla
MCSER, CIDSE
Ira A. Fulton Schools Of Engineering
Arizona State University
sganga10@asu.edu
1*216225127*

Yash Jain
MCS, CIDSE
Ira A. Fulton Schools Of Engineering
Arizona State University
ymjain@asu.edu
1215175494

Abstract

An innovative android application revolving around the culinary arts and searching restaurants. This application allows the user to take a snap or choose and image from gallery and finds the recipe based on the uploaded image by parsing the dish name using an API. Furthermore, the application also provides user locations using GPS and the nearby restaurants with that particular dish on it's menu.

Introduction

As we know, the internet has taken over since the overwhelming acceptance of the smartphone. It no longer takes a professional chef to make the perfect dish. This application will help you re-create the dish just by simple snap or an image from your gallery, the image is provided to the application, which identifies the dish and gives you the recipe. In addition to this feature, the *RecipeMaker* application also searches the restaurants around you that specializes the said dish. This gives a fresh user experience by helping to cook the dish or by providing the location of where it can be found using GPS.

Author Keywords

API, REST

Project Setup and Permissions

The architecture consists of 3 systems. The setup is required for sending request to the API's.
1. Android device

Make & Model: Nexus 5
OS: Android 7.0 (Nougat)

Setup for Cloud Vision API

1) Login to your google account.
2) Enable the billing for Google Cloud Platform project.
3) Enable the Google Cloud Vision API.
4) Create an API Key.

Setup for Food2Fork API

1) Sign Up for Food2Fork account.
2) Enable the billing by entering card details.
3) Create an API Key.

Setup for US Restaurant Menus API

1) Sign Up for Rapid API account.
2) Enable the billing by entering card details.
3) Create an API Key.

We need the following permission to run this application

1) Application require permission to use internet connection.
2) Permission is required for accessing the location of the device to search the nearby restaurants.
3) Permission to read and write external storage is required if the user wants to use gallery for sharing image of the dish.
4) Permission to access the camera is required if the user wants to capture the image of a dish and want to search for it.

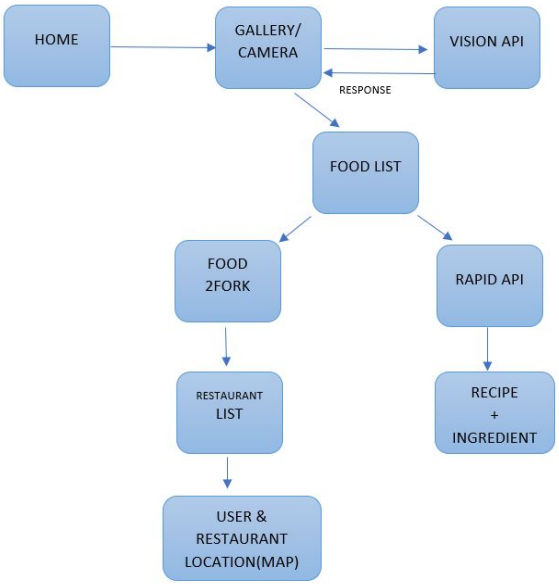

Figure 1. Basic Architecture of the Application

Implementation

We have implemented several tasks in order to accomplish the project

1) Developing the UI which interact with the user

As soon as user open the app, he will be asked to perform either of the following:-

a) Write the name of the dish in the text box.
b) Capture image of the dish using camera.
c) Select image of the dish from the Gallery

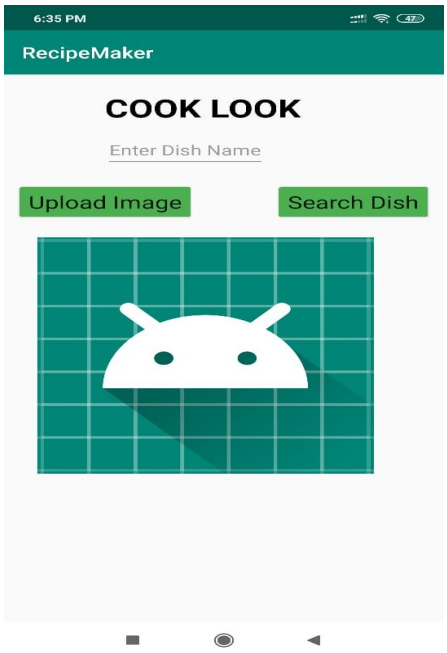

Figure 2. Initial Screen of the app

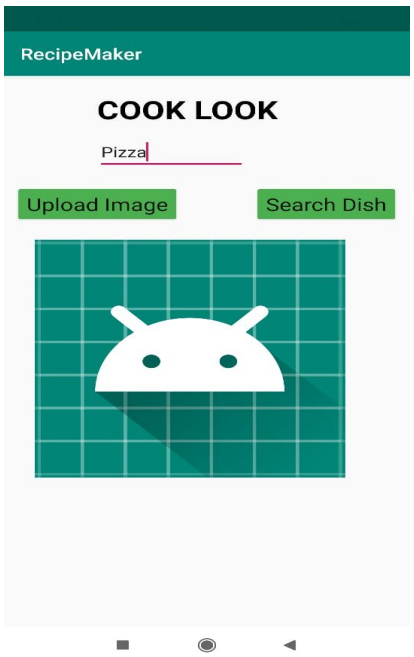

Figure 3. Text as dish name "Pizza" is entered into the textbox for searching

.

If the user wants to provide text then he needs to enter the dish name and then need to select "Search Dish" button.

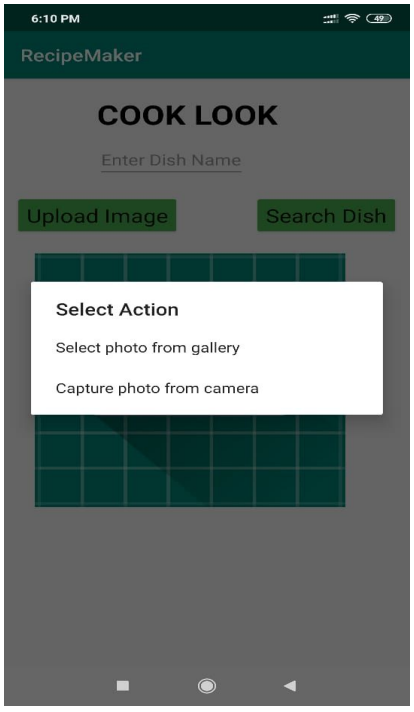

Figure 4. On clicking Upload Image button given two options will be provided

Otherwise user is required to select Upload Image button

where he will be giving two options ie either the user can select photo from gallery or he can capture photo from camera. In both the cases user will be asked for extra permissions if he is uploading image for the first time.

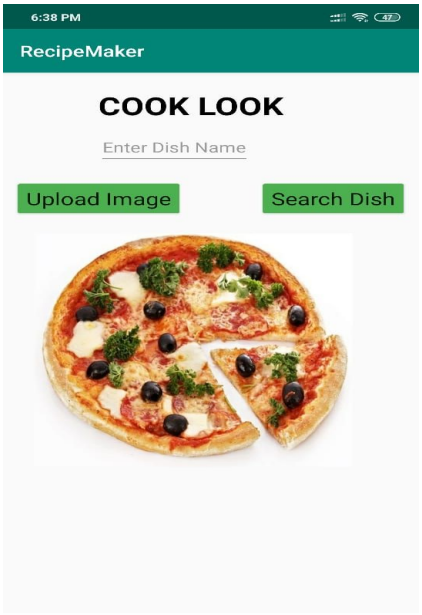

Figure 5. Providing Pizza image from the gallery

2) Converting the image of the dish selected by user into the text

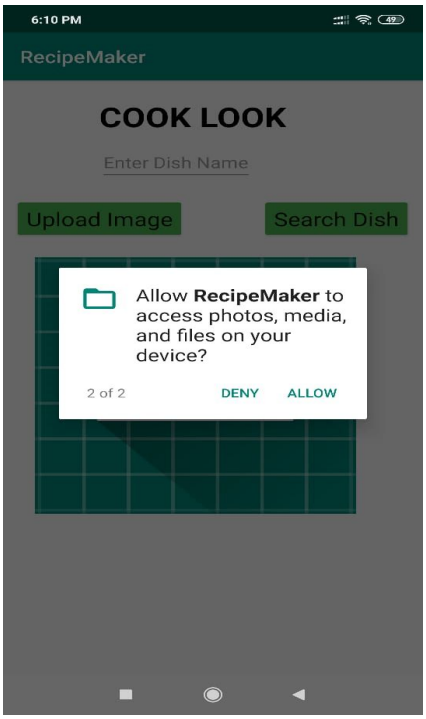

Figure 6. Asking for User Permission for accessing gallery.

When the user either select image from the gallery or try to use camera for capturing image then the application will ask the user to give permission for gallery access or to give permission for camera access depending upon the option selected by the user. When the user provides the permission then the image selected by the user is uploaded and is converted into its name. The list of possible dish name will be shown to the user and the user can select any of those options to search for its recipe and the nearby restaurants.

If the dish name which the user wants to see is given as the text then the request to this API will not be sent and he will be directly redirected to the page in which user is asked whether he wants to look for Recipe of the dish or the nearby restaurant with that dish.

When the "Search Dish" button is pressed, the REST call is made to the Google's Cloud Vision API which will return the list of possible dish name as the response that can be used further by the user to search their recipes and the restaurants within the distance of 1 mile.

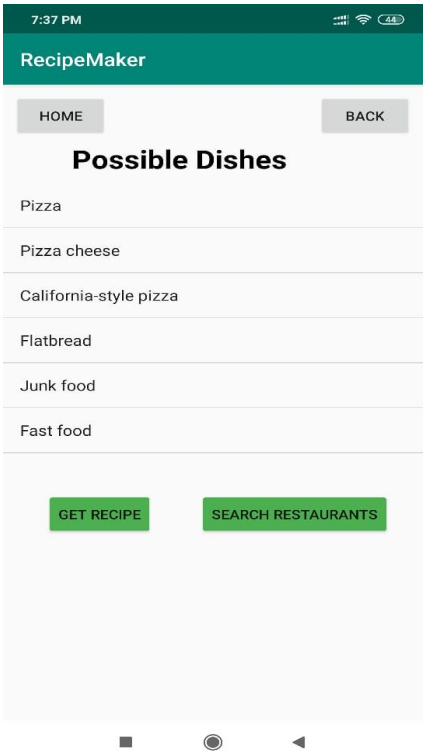

Figure 7. Possible dishes Options for Pizza image are provided

3) Giving Recipe of the dish

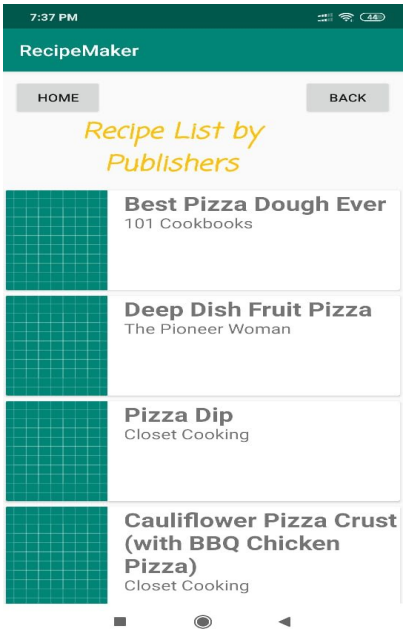

Figure 8.On clicking Pizza in possible dishes option list, we will get the Recipe List by different publishers for Pizza

Figure 9. On selecting first Publisher "101 COOKBOOKS" we will get the ingredients and the URL for the recipe.

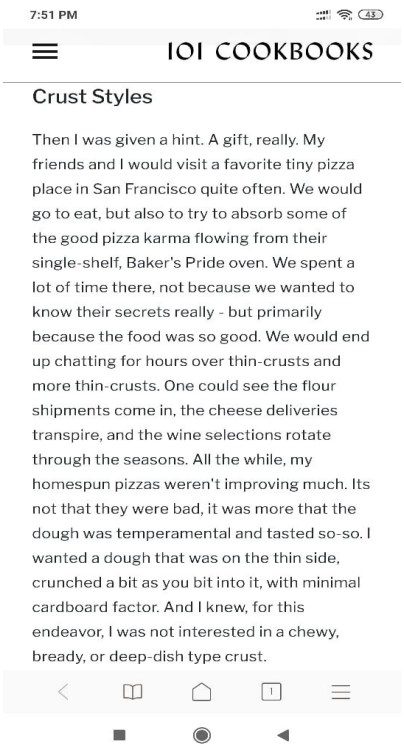

Figure 10. On pressing the URL, we are redirected to the recipe by that publisher

When the user press the "Get recipe" button then the list of recipe by the different publishers is exhibited to the user and the user can select any publisher and can look for the recipe given by that publisher. In this way he can look for different variants of that particular recipe by the different publishers and can use any of them to make that dish.
When the user clicks the "Get Recipe" button then the call is made to the Food2Fork API which will give back a list of recipes for the same dish by different publishers as the response. The user is allowed to search for the best recipe from the list of recipes by different publishers..

4) Giving Restaurant which contain the dish selected by the user and within 1 mile distance from device location

When the user hits the "Search Restaurants" button for the first time, he will be asked for the permission to access the device's location. When permission is given, the user will be given a list of restaurants located within the distance of 1 mile containing that dish. User can see the location and the direction of a particular restaurant on the map.

Figure 11. List of Restaurants, that contains the given dish, will be displayed

As soon as the user clicks the "Search Restaurants" button a rest call is made to the US Restaurant Menus API which will search the restaurant menus from the database. Then the restaurant which contains that dish will be returned as the response. The response is then filtered based on the distance of the device from the restaurant to be less than or equal to 1 mile.

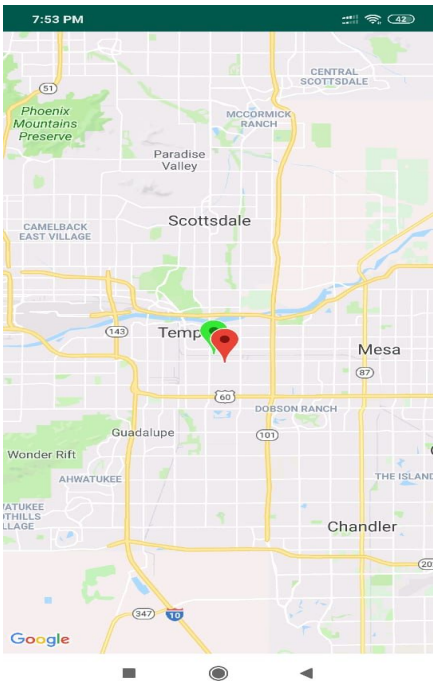

Figure 12. Location of the particular restaurant is shown on the map

Completion of Task

Serial No.	Task	Assignee
1	Fetching nearby restaurants	Vinay
2	Select an image of a dish	Yash
3	Connecting with Food2Fork API to get recipe	Aakash
4	Search for camera availability	Amit
5	Displaying restaurants in the Google Map	Vinay
6	Enter text to search for recipe	Yash
7	Take permission for the gallery access	Aakash
8	Get the location of the user	Amit
9	Displaying restaurants in the form of list	Vinay
10	Clicking an image using camera	Yash
11	Create a toggle button to switch between maps and list view	Aakash
12	Search restaurants by location	Amit
13	Displaying recipe of the dish	Vinay
14	Connecting with Google web service- Cloud Vision	Yash
15	Take permission for camera Access	Aakash
16	Connecting to web service -US Restaurant Menus API	Amit
17	Displaying user on map	Vinay
18	Converting image into text	Yash
19	Getting recipe of the dish	Aakash
20	Search restaurant by user location and dish name	Amit

Limitations

This app require the permission to access gallery or camera if the user want to upload the image of the dish. Moreover, this app will require the user to connect to the Wifi or the mobile data for its functioning. Also, it might not give the recipe of a dish for any particular publisher if the user is looking for that. Further, this app will give only those nearby restaurants which are part of the database to which our api is connected.

Conclusion

In this project, we have created an application which can help the user to search different recipes for a dish, search the nearby restaurant which contains that particular dish and search the restaurant in the vicinity. Moreover, this

application will help the user to search for the dish name from its image. Further, this app is also very useful in knowing the restaurants which are situated in the vicinity of the user.

Acknowledgements

We would like to thank Dr. Ayan Banerjee for imparting us the knowledge related to different components of Mobile Computing which we use in creating this application. As we have implemented different theoretical concepts of Mobile Computing in this application, it helps us to understand them with more clarity.

References

[1] Rapid API, US Restaurant Menu API Documentation- https://rapidapi.com/restaurantmenus/api/us-restaurant-menus/endpoints

[2] Food2Fork, Food2Fork API Documentation, 2019- https://www.food2fork.com/about/api

[3] Google Cloud, Cloud Vision API Documentation- https://cloud.google.com/vision/docs/