

Digital Food Ordering System using Android for Mess

Pandhare Sonali¹, Shrike Priyanka², Swami Megha³, Takawane Pratima⁴

^{1,2,3,4}Student, Department of Computer Engineering, SVPM's College of Engineering, Malegaon, India

Abstract: The online mess ordering system which identifies and locates nearby mess and order mess food services via online. Many times customer cannot get the boarding facility, but in our system customer can get delivery and boarding also. The meal service android application set up the menu online and the customers easily place the order with a simple touch. The users can select the desired food items from the displayed menu. The user orders the food items. The payment can be made online or cash-on-delivery system. It maintains a separate account for each user so that the user's details are maintained confidential. The user id and password are provided for each user. Therefore, it provides a more secure ordering system. User's location is detected by GPS which is used to show nearby mess service providers which have registered this application, by which user can easily be aware of the mess service providers which are near to its location and user can select required mess based on user's requirements to order food. Users can search the various varieties of mess which are providing good service.

Keywords: Mess, GPS (Global Positioning System), Google map API, Food, Travel, Online ordering, Sorting, Android, Review

1. Introduction

Nowadays, hotel services are digitally active were as mess services lag behind. Newcomers to an unknown place for the job, study, travel, etc., usually face the problem in finding mess services near to their location. Also, some user doesn't always get the meal for their budget or satisfactory services they look for the external food source. Our system will interact with the user's location and provide information about active mess services prior to their location. The record of customers can have managed and maintained by the system and placed the order online. This Android Application has been made in a user-friendly interface. So that item easily added and deleted by a customer. The menu card of different mess consists of various food varieties available in the mess. Using this android system application, the customer can simply click and order the food. The Payment gateway prepares the bill according to the delivered food. The online food ordering system provides an easy way for the customers. It overcomes the drawback of the traditional queuing system. The payment can be made online or cash-on-delivery system. It maintains a separate account for each user so that the user's details are maintained confidential. A User ID and password is provided for each user. Therefore, it provides a more secure ordering. By using this application user can give their reviews. This android application promotes

good service and achieves customer satisfaction along with profiting current mess services. The system is designed in such a way that it will solve issues at both the sides that is providers of food service as well as consumer of the service. Peoples are moving to different cities for various purposes. They need some specific source of food. The people who shifted anywhere they can't afford restaurants and hotels every day. It is difficult for the newly shifted person to find good nearby food service. On the other hand, food service providers face many problems of maintaining the record, informing the customer in emergency cases, getting feedback from the customer and many more. Keeping all scenarios in mind the system customized according to a need of user and service providers.

Basically, the idea comes from restaurant management systems, there are various facilities provided so that the users of that system will get service effectively. So why not provider Mess will get those facilities. Again the idea comes that mostly mess users are a person who is shifted for various reason in new cities. So they are interrelated. The goal is increasing use of smartphones so that any users of this system get all service on the single click. There are many systems developed on restaurant management so to take an idea about all process we reviewed various papers on restaurant management, various algorithms and various android applications which are in a market. People's lives have been improved due to rapid economic and technological developments. In almost every field, the traditional way of doing things in the industry has changed, and this has made life easier and more convenient. However, the food industry is still lagging behind other industries in adopting new technology, especially autocomplete in various processes. Even today, many restaurants follow the complete manual process of pen and paper in the food order. In the traditional pens and paper system, the Vetter keeps the customer's orders in mind, orders are taken in the kitchen, updating them in the records, giving the ordered items on the right table and then making the bills. The online food order system sets up the online food menu and customers can easily place orders accordingly. As well as with food menus, online customers can easily track Order Management reserves the database of customers, and to improve food delivery services.

In section II, our all survey paper details are mentioned. We served all this paper and conclude that the major disadvantage of tradition queuing system using paper and pen, to overcome

this we developed our android mess application which is easily handled by the customer online. In old systems, the newcomers to different places face the problem of finding the nearby messes. There is not any application developed earlier which give more efficient searching. In section III the proposed system describes the main component of our application like registering the customer in the application and placing the order by GPS or manually to get good food service. In Ivth section, whole system architecture is described. Section V described the methodology, using K-means clustering to find out the nearby mess using various clusters of the mess.

2. Literature survey

The online food ordering system is easy for the customers. It overcomes the disadvantages of the traditional queuing system. This proposed system is a medium to order online food conflict-free from restaurants as well as mess service. This system improves the method of taking the order from the customer. The online food ordering system sets up a food menu online and customers can easily place the order as per their wish. Also with a food menu, customers can easily track the orders [2]. This system also provides a feedback system in which a user can rate the food items. Also, this system can recommend hotels, food, based on the ratings given by the user, the hotel staff will be informed for the improvements along with the quality. The payment can be made online or pay-on-delivery system. For more secured ordering separate accounts are maintained for each user by providing them an ID and a password [15]. A system is based on customer needs. The system is developed to considering the issues related to all customer which are included in this system. The wide range of people can use this if they know how to operate an android smartphone. Various issues related to Mess/Tiffin Service will be solved by providing them a full fledged system. Thus, the implementation of the Online Food Ordering system is done to help and solve one of the important problems of people. Based on the result of this research is It helps a customer in making order easily It gives the information needed in making the order to a customer [9].

Automated mess service based on user's location paper [6] discusses the Android-based system to develop an online mess ordering system which will identify and locate nearby mess and order mess food services via online. This system will interact with the user's location with the help of 'GPS & Geo Tagging on Android Platform' and provide information about active mess services prior to their location [12]. They use 'Dijkstra algorithm' to find the shortest path to measure the nearest mess. By using this application user can give their review based on their order history which will validate good service practices among mess to compete for higher ratings. Thus our system provides a platform for advertisers and interact-action between mess and customers. Before placing the order, we make sure that the user is registered to avoid anonymous entries. Their main aim to fulfill customer satisfaction by making them aware

of nearby mess service providers with their food style, which will be fulfilled using our application. Furthermore, they could use 'Latent-Semantic Analysis' LSA algorithm to analyzes the relationships between a set of documents and the terms they contain by producing a set of concepts related to the documents to provide the more efficient review. This system helps to give more priority to mess service and enrich their growth from their current fading situation [19].

In Food finder- Mobile food ordering application paper [4], the purpose of this application is to develop an online Food Finder application. The reason to develop the system is due to the issues facing the food industry. The challenges encountered by the existing system serve as a major drawback to the realization of efficiency and customer satisfaction. This application will contain different types of food varieties available for the user to buy online. The system also allows to quickly and easily managing online menu which customers can browse and also predict how much is spend on food, and use to place orders with just a few clicks [17]. The main aim is to increase efficiency and improve services provided to the customers through better application of technology in daily operations. The disadvantages of the paper-based system are that papers can get easily damaged by stain marks they can be lost due to fire or accidents or can get lost in general. Hence, time and money are wasted. This system is very Time-consuming. lack of visual confirmation that the order was placed correctly. The necessity for a restaurant to have an employee answering the phone and taking orders Difficulty in tracking customers past history. Here implementation of an advanced e-restaurant menu ordering system using the smart android mobile phone. The idea of the advanced e-restaurant can also be extended for future using GPRS accessible module [4].

A Proposed System for Touchpad Based Food Ordering System Using Android Application paper proposes an automated system that uses wireless communication, a centralized database, and an android application to place the order without even waiting for a waiter. The advancement in information and communication technology has greatly influenced the business transactions. In earlier days, food industry traditionally has lagged behind other industries in adopting new technology [4]. However rapid advances in computer technology and heightened expectations of consumers have forced the food industry to bring automation in the process. Nowadays, the adoption of wireless technology & the emergence of mobile devices has led to automation in the food industry. The business and services in restaurants can be improved with the combination of wireless and mobile technologies. In this paper, they have done a research work aims to design and develop a wireless food ordering system in the restaurant [14]. In this system, customer orders the food by using an android based touchpad. Customer first orders the food from the touchpad looking at the various combination of food which is further carried to the kitchen for fulfilling the order and

the same is passed for billing at the each customer's tablet. In the future, work can be done on providing provisions to accept different types of payments like credit cards, debit cards, tips, etc. The system can be further extended to register and link multiple restaurants to enhance the dining experience of customers.[2]

In E-FOODWORLD paper [10], there are many systems developed on restaurant management so to take an idea about all process we reviewed various papers on restaurant management, various algorithms and various android application which are in a market. In this paper, the proposed system will be designed in such a way that it will solve issues at both the sides that are providers of food service as well as consumer of the service. This system is for making efficient communication between consumer and producer. In this, they are designed a system based on a part of restaurant management that is to manage the order of customer using Zigbee wireless technology which will give an advantage of mobility and ease of access [11]. The system uses a small keypad to place orders and the order made by inserting the code on the keypad menu. The main of this system is to eliminate the burden of searching for good food in a new city. To save the time of managing all the tasks for a food service provider. To provide user-friendly efficient service to all users. In the proposed system they are using Geo-hashing technique for searching. Their project basically depends on how accurately it finds the nearest mess according to users requirement. Various issues related to mess will be solved by providing them a full-fledged system. Thus we are implementing E-Food World system to help and solve one of the problems of people [22].

3. Proposed system

Our system design in such a way that it solves issues at both the sides that are providers of food service as well as consumer of the service. Today peoples are moving to different cities for various purposes. The person who is shifted can't afford restaurants and hotels every day. It is also difficult for the newly shifted person to find specific, good, nearby and affordable service. On the other hand food service providers i.e. mess or tiffin based service are faced many problems of maintaining the record, informing the customer in emergency cases, getting feedback from the customer and many more. The proposed system consists of the following module:

A. Customer start the application by registering the data

In the home page, there is a menu bar which contains tab and starts to use the application.

B. Order placing task

In this module, the user can set a location using Google Maps. Once done with setting location this page will redirect to Meals page. At the bottom of the page, this module should include all the information related to the product. If location is not set and a user clicks on other module tabs on the module load its should prompt set location dialog.

C. Different variety of Meal Menu Display to customer

In this module includes show Lunch or Dinner option. Depend upon the selection mess list needs to have appeared, also show main filters as Vegetarian and Non-Vegetarian. Sorting will include Price, Rating, and Favorites.

D. Customer Book the Meal

In this module, User has to select one option from Lunch and Dinner which will be shown in tabular format. Clicking on Add button for that particular date this entry should be added into the cart. Once done with booking, after clicking on Proceed to payment, Dialog should open showing date wise booking and cost.

4. System architecture

System architecture will simplify the whole system in such a way that every user of the system gets benefits. As shown in fig 1(System Architecture) Users, owner of mess/parcel service. When a person shifted to a new city he has to find a source for hygienic and quality food so he will search and select mess or home-based food service based on his category that is whether the person is a student, employee or general as well as service that is veg or non-veg. Here the main function is in what pattern user will search the service so for that purpose. The person can have the facility to search service by location that is the home location of the person is detected with GPS and according to the selected option location of nearby service get searched. Another way for searching is by cost. The user can also search by rating.

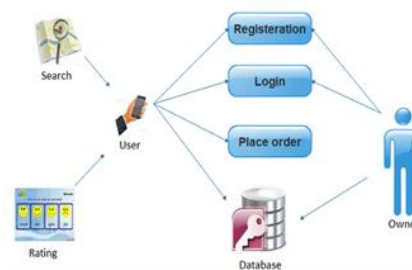


Fig. 1. System architecture

5. Methodology

A. Geofencing polygon method for new mess finder

1) Geofencing

Geofencing is location-based service. Geofencing is a boundary or region of interest in the geographical region. Geofencing uses the GPS technology to create a virtual geographical boundary, enabling trigger a response when a mobile device enters a particular area. To make use of geofencing, an administrator or developer must first establish a virtual boundary around a specific location in GPS. This can be as simple as a circle drawn 100 feet around a location on Google Maps Geofencing isn't just for mobile apps-its used to control and track vehicles in the shipping industry.

B. Benefits of geofencing offer for your system

Some of the benefits that your System might experience after submitting geofencing to your marketing policy:

1) Improved local optimization

In many highly customized local searches, Geophanes can be a very powerful tool that helps you get into a high class. Location based system enables you to target local customers in a particular area of your choice, so your message becomes periodic and relevant.

Save money, earn money: The more budget you have available, the larger or the smaller, the geographical things can be important to how you can spend it more effectively.

C. Circular Geofencing Using Haversine Formula

In the below algorithm, geofence of radius 'r' is created around the point Go The distance between Go and Gi is calculated using Haversine formula. The Haversine formula determines the great-circle distance between two points on a sphere given their longitudes and latitudes.

1) Input

- Gi the position of the interest. Gi = [lati , longi]
- Go is the current position of the user. Go [lato , longo]
- r is the radius of the geofence.

2) Output

- True if the Gi is within Geofence range of Go
- sCheck With In Geofence Range ()

```
{
1. Distance = 0
2. Distance = getDistanceFrom Location ( Go , Gi ) ;
3. If ( d < r )
4. Return true
5. Else
6. Return false
7. End if } Get DistanceFromLoaction ( Go , Gi )
{
8. radius =6371; //radius of earth
9. dlat = deg2rad ( lati , -lato );
10. dlong = deg2rad ( longi , -longo );
11. a = Math.sin ( dlat / 2 ) * Math. sin( dlat/2 )
+ Math. cos ( deg2rad( lato ) )
* Math. cos ( deg2rad( lati ) )
* Math. sin ( dlong/2 ) * Math. sin ( dlong/2 );
12. c= 2 * Math.atan2 ( math.sqrt ( a ) ,
Math.sqrt ( 1-a ) );
13. D= R* c;
14. Return d;
}
```

6. Future study

This system can extend to the many regions and registered a different mess. If the customer can order the food within the specific distance, then in future we maintain the distance criteria and fulfill the requirement of the customer to get the good food delivery or boarding. The scope will be we create

many service providers under the admin and expand the food delivery criteria. Many people have used a smartphone so it can extend in the future.

7. Conclusion

This application developing an online mess service booking system based on user's location where users are able to sort messes according to their requirement. This system is to increase efficiency and reduce human errors and provide high-quality services. By using this system, this will avoid long queues at the counter due to the speed of execution. This system is time-saving. The customer meal service android application can handle the billing hence it is the modern way to grow up the business using E-commerce. A system is able to stand out from competitors in the foodservice industry. Here the user is permitted to rate their favorite mess and give feedback to improve and encourage their experiences with mess providers. Therefore, the conclusion of the proposed system is based on customer's requirement. The wide range of people can use this system if they know how to operate the android smartphone. The scope of the proposed system is justifiable because in large amount peoples are shifting to many cities so a wide range of people can use this system.

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