

# Smart Restaurant Offer System

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**Abstract:** *Food is the basic necessity in everyone's life. Our daily routine starts and ends with the food that we consume. The key idea of this proposed system is to create an application that serves the customer with daily offers being notified to them automatically as notifications or pop-ups, when they reach particular area. This works using Google Maps API. Since our application needs is a data connectivity with a good display, the cost of the set-up is kept minimum. The locations get updated for every minute for this fused location provider. This smart restaurant concept enhances a lot of convenience by smart phones and the rich applications in the devices*

**Keywords:** Google Maps API, Smart offers, Fused Location Provider, Nearby Location

## 1. Introduction

In this application, we use offers in restaurants from small scale to large scale and shops by radius. By using Google Maps API, this application will work by radius of the Geolocation on particular registered area.

We can find a large number of location-based applications that can simply collect users location information through the embedded GPS module on smart mobile devices. An application on android will help customers to know more about the restaurant offers and its services, and will facilitate online ordering and prior reservation of table.

Android is an open source Mobile OS with simplified development process. Android is the best mobile platform between the application and processes architecture as it allows easy integration.

In the existing system that is already available we have restaurant services such as reservation making, processing orders and delivering meals generally require waiters to input customer information and then transmit the orders to the kitchen for preparation. Here the customer pays the bill, the amount due is calculated by the cashier. Although this procedure is simple, it increase the workload of waiters and causes confusion while preparing, especially when the number of customers suddenly increases during peak hours, which seriously degrade the overall service quality.

This system consists of a Smartphone/tablet at the customer side which contains android application with all the menu details. This wireless application is use-friendly and also improves efficiency and accuracy for the restaurant by saving time and also reduces human error.

## 2. Literature Review

The paper gives information regarding offers in restaurants which is available for customers to obtain what they want exactly. The customers i.e. the restaurant customers will have maximum interaction with this system. This interaction occurs mostly through the tablet application. Whereas most applications that have a targeted user base, our application can be used by all & various kinds. Thus it

is user friendly and intuitive. Much private information about so many businesses and individuals will be stored in our database. We have to ensure that the whole system - the app, the web service, the database as well as the server are been kept secure from external as well as internal threats. Thus security is another important factor been achieved.

Traditional method that is used commonly in hotels is by taking the customer's orders and writing it down in a piece of paper and then passing the order in the kitchen section. The food ordering system is proposed with the help of handheld device placed on each table that is used to place an order at the restaurant. The system uses a TFT touch plus LCD display module which is placed on each customers table for them to place orders. Order is made by selecting the items been displayed on LCD. The order will be sent from the customer by means of Bluetooth communication and will automatically be displayed on a screen at the kitchen. The bill will be generated with related table number at the manager/billing section. It will consume the time spent on placing the orders and paying the bills, thereby reduces the cost and man power is reduced

## 3. Proposed System

In this proposed system, we use the Google maps API that will work by the radius of the geo-location by particular registered area. Owner/Admin will update their current offers in database (daily process). Those offers are stored in database using JSON method. JSON is quite simple, easy and for exchanging and storing data from and to database. which is an alternative for XML (Extensible Markup Language). The data in JSON format is stored in file with an extension of ".json". User will register their personal data with Geo-Location. When the user reaches the location, they will get auto push-notification. User just registers his/her current location it will automatically updated for every one minute. We use Fused location provider in Android. To get push Notification we used Firebase Cloud Messaging that sends messages to any device. It consists of modules namely,

- 1) Registration
- 2) Upload/Retrieve
- 3) Integrate

### Registration

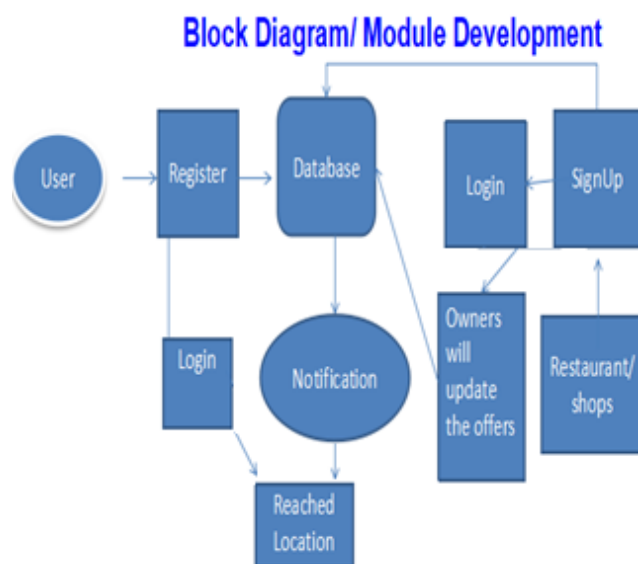
- Owner/Admin will update their current offers in database
- There is no Login/Registration pages or layouts.
- Those values are stored in database using JSON method.
- JSON is quite simple, easy and light-weight format for exchanging and storing data from and to database.

### Upload/ Retrieve

- User will register their personal data with Geo-Location.
- When the user reaches the location, they will get auto push notification
- User just register his/her current location it will automatically updated for every one minute.
- We use Fused location provider in Android.
- The fused location provider is one of the location API in Google Play services

### Integrate

- Integrating the both modules, the notifications are received when user reaches the particular location.
- To get push Notification we used Firebase Cloud Messaging Send messages to any device.
- Connection between server and device allows to deliver and receive messages and notifications



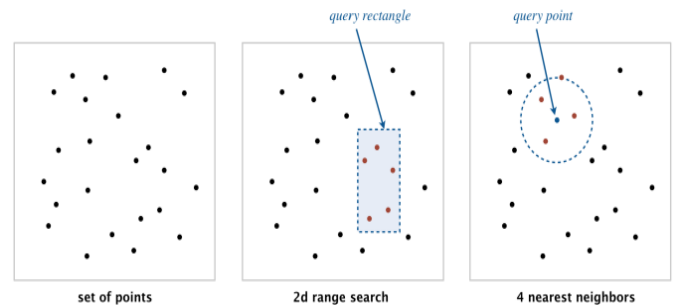
## 4. Algorithm

A **k-d tree** called k-dimensional **tree** is a space-partitioning data structure used for organizing points in a k-dimensional space. **k-d trees** are useful in data structure for several applications, such as searches involving a multidimensional search key (e.g. range searches and nearest neighbor searches).

In this algorithm, every non-leaf node generates a splitting hyperplane that divides the space into two subspaces. The points left to the hyperplane represent the left sub right sub tree. The hyperplane direction is always chosen in the following way: every node split to sub-trees is associated with one of the k-dimensions, such that the hyperplane is perpendicular to that dimension vector. For example, if for a particular split the "x" axis is chosen, all points in the subtree with a smaller "x" value than the node will appear

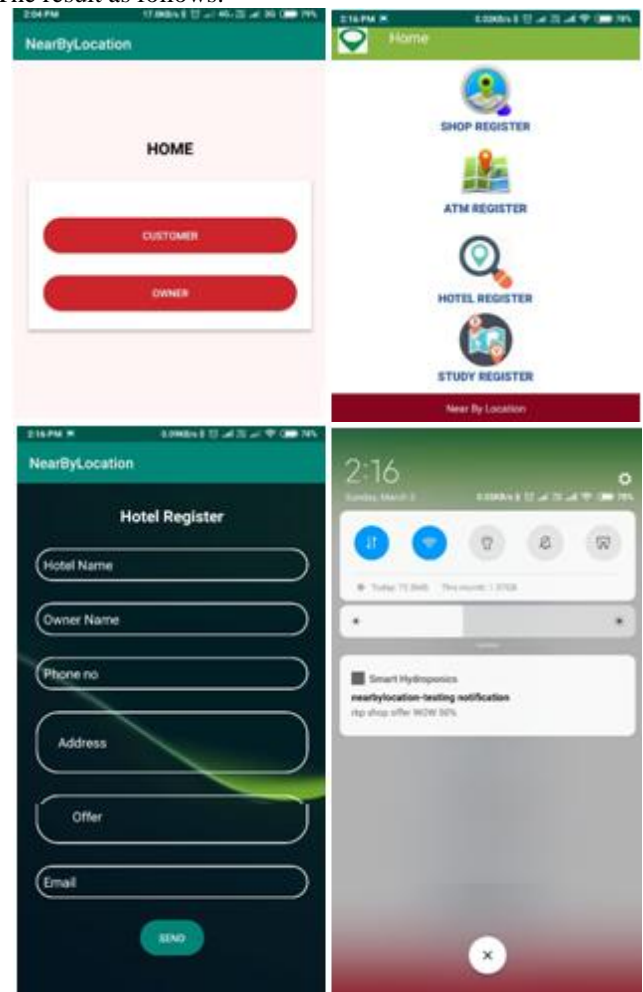
in the left subtree and all points with larger "x" value will be in the right subtree.

KD-trees are not always suitable for efficiently finding the nearest neighbor in high dimensional spaces. In general rule, if the dimensionality is D, then number of points in the dataset, N, should be  $N \gg 2^D$ . Otherwise, when kd-trees are used with high-dimensional dataset, most of the points in the tree will be evaluated and the efficiency is no better than exhaustive search, and approximate nearest-neighbor methods should be used instead.



## 5. Result and Discussion

The result as follows:



## 6. Conclusion

In this paper, we have presented a system for the customers to get instant offers in any area they travel using android

application installed in there smart phones.The customer can also view nearby restaurants/shops in whichever location he is in and can view his/her order through the application. The user can take advantage of this application as every data is kept online and provides a real-time experience.

## References

- [1] Mayur D. Jakhete , Piyush C. Mankar “Implementation of Smart Restaurant with e-menu Card” , International Journal of Computer Applications (0975 – 8887) Volume 119 – No.21, June 2017
- [2] May H. Riadh ,“Notification System to Students using Android”,Application International Journal of Computer Applications (0975 – 8887) Volume 140 – No.1, April 2016
- [3] Prashansa Gupta, Ankan Aun Bhowmick, Prasun Jha, Netra Patil, “Location based Android Application: Geo-Location”, International Journal for Research in Applied Science & Engineering Technology (IJRASET), Volume 6 Issue V, May 2018.
- [4] Anand Gupta,Kuldeep Singh “Location Based Personalized Restaurant Recommendation System for Mobile Environment” ,International Conference on Advances in Computing, Communications and Informatics (ICACCI)2018
- [5] Anisha Cotta, Naik Trupti Devidas,Raikar Ankita Tanaji,“Smart Restaurant Menu Ordering System”, IJSTE - International Journal of Science Technology & Engineering | Volume 2 | Issue 09 | March 2016
- [6] Sushmita Sarkar, Resham Shinde , Priyanka Thakare, Neha Dhomne , Ketki Bhakare,“Integration of Touch Technology in Restaurants using Android”, International Journal of Computer Science and Mobile Computing, Vol.3 Issue.2, February- 2014, pg. 721-728