

## REVIEW ON-DESIGN AND IMPLEMENTATION OF OUTDOOR AND INDOOR CAMPUS NAVIGATION SYSTEM

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**Abstract-** Collage campuses growing day by day so they can be huge and complicated for visitors. It is very difficult for them to reach at their destination or exact place. GPS, satellite images, Maps, etc. Provide us adequate information, but it doesn't provide the information when we are actually on the campus. The issue with the GPS technology is that signals from the satellites does not pass through walls / ceilings. Beacons provide accurate information about indoor environment. It gives the information where an item you are looking for is located. This android application guide us within the campus itself including both the indoor and outdoor location information.

**Keywords-** GPS, LBS, sensors, beacons, satellite, signal.

### I. INTRODUCTION

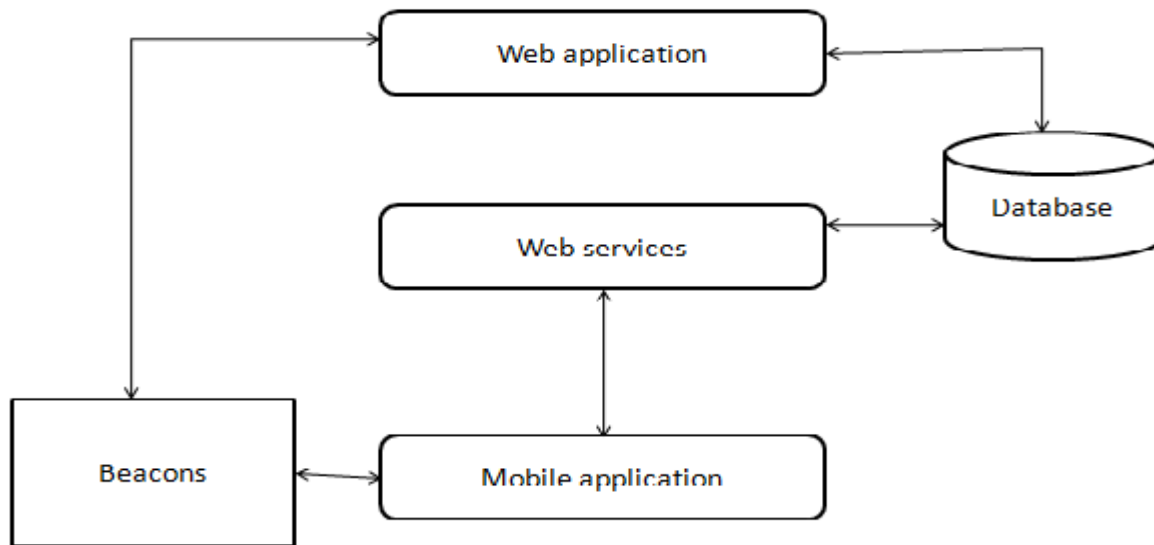
A campus has very large and complicated infrastructure, so that when new person or new student or visitor visits to the campus they are not aware of the campus infrastructure. It very hard to access the accurate destination. Nowadays many of campus occupied more than 250 square kilo miter of area. University campus include number of different trades, buildings. they are interconnected to each other which having N number of floors. for the new visitors maps are provided at the some places but to find the the exact destination user does not get the accurate detaile information.

They try to figure out a way to get to their target on the static maps placed on the differnt places, Therefore its very time consuming. The Answer for this problem is "Campus Navigator". our campus navigator application helps user to obtain the path much more detailed than existing commertial application can be provide. A simple navigation application development would not be simple task. The repretation of graph structure, with locations of (canteen, account section, class rooms, Cabins, parking lots etc). This application hleps the user to route form his current location to its accurate Destination location. The main goal of this System provides facilities to the teachers, students and visitors to provide navigation information about campus, Including outdoors as well as indoor navigation using handheld devices.

**The system meet following three primary Objective:-**

- A. Device must able to provide the accurate Determination of the current location.
- B. Device must guide the user to its proper Destination.
- C. Device must guide a user to find indoor location.

## II. INDOOR SYSTEM ARCHITECTURE



### Database

Database will hold the Beacon related details like Beacon Unique ID, Major, Minor, Proximity (Near/Far/Immediate), Message and map to display on Mobile.

### Web Application

Web Application is created to enter the beacon specific details into the database.

Admin can upload the custom floor map images into Database and map it with beacon which will get displayed on the Mobile device when the beacon will be detected by Mobile Application

### Web Services

Web Service will responsible for sending Beacon related details to Android application.

This is required as mobile application cannot directly communicate with Database.

### Beacons

Beacons are the low energy Bluetooth device. They emits signal in each seconds.

Beacons can be used for multiple reasons but here we are using it for indoor navigation.

### Mobile Application

Mobile application will be created in Android.

This mobile application will be responsible to detect beacon signal and will call the web service to get the beacon details.

Mobile application will be used by end user for indoor navigation system.

## II. MATHEMATICAL MODEL:

Z is system that navigate user to location

$$Z=(G,B,M,S,U)$$

Where,

B is Set Of beacons i.e  $(b_0, b_1, \dots, b_n)$

U is set Of users i.e  $(u_1, u_2, \dots, u_n)$

G is GPS

S is Database Server

1.Start state=Enter the query

2.End state=Get map of location

3.Input: Location

4. Output: Map

5.  $F = \text{Set Of Function}$

$F = (f_1, f_2)$

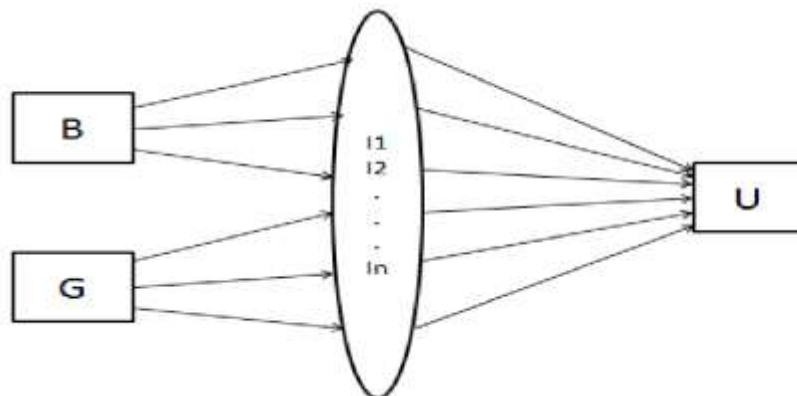
where,

$f_1 = \text{start}()$

$f_2 = \text{getLocation}()$

6. Success case = Location Found and showing Map

7. Failure case = Invalid Location



### III. CONCLUSION

In this paper we presented a campus navigation application developed on an Android platform. The application provides various navigation services to users at Sandip University campus. Campus navigation can be an effectively used in wide campus such as collage, Hospitals, Malls, etc. The shortest path feature of this application will save time of user. Hence the strength of this application is the easy to use navigation feature which is able to find paths on campus to user defined locations.

### IV. ACKNOWLEDGEMENT

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