

# LOCATION BASED REMINDER SYSTEM USING MOBILE GPS SYSTEM

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## ABSTRACT

*Privacy and security is most important part while using the location based services. The aim to develop location based reminder system is provide an interactive user friendly environment to user's as well as privacy about their saved location and current location. Location based service, provide many facilities to smart mobile phone users. They can navigate map, set location while driving and many more. With the using of "Location Based Reminder System" the user can set their task or reminder for particular location. With the help of this, no need to worry about the particular task at particular location. When the user is near about the location, it will automatically remind for saved task. Location Based Remind System consumes the low data, because in this project the user's data saved in local system.*

**Keywords:** Location Based Reminder System, LBS,GPS,

## I. INTRODUCTION

Today Most of the people use the smart phone and most of the smart phones are GPS enabled. The GPS system helps the user to get the current location. With using of this concept "Location Based Reminder System" will work when the location is near about the saved location. Ones the reminder set no need to worry about the alarm. The above task will automatically performed in background.

By using the concept of location based services provide the mobile application users to personalized services according to their current location[5]. It also open a new area for developers, mobile service network operators, and service providers to develop and provide value-added services to their client like advising clients of current traffic conditions, providing routing information, helping the users to find nearby shopping malls and many things.

There are many applications which uses the location service for example finding the particular city or district on map and the most popular is route finding while driving developed by Google. Also the e-commerce mobile application use the location based service to know the user's current location and for delivery option.

The "Location Based Reminder System" will consume low data, because we use the mobile phone to store the user's data instead of using the web server for saving the user's data. It will consume the data only for getting the location. So this project is cost effective with respect to data consumption.

To develop the system, location based reminder services, here the Android is used. The algorithm to find the saved location, firstly the GSP system will get the user's current location and then it will compared with the user's saved data. If the condition satisfied the system will remind the user's that you saved a reminder for this

location. Here the reminder is based on the distance of the user's location, means the user can give the distance of target location to remind while travelling or walking.

**Haversine Formula :** The haversine formula is an equation important in navigation, giving great-circle distances between two points on a sphere from their longitudes and latitudes[L1]. By using the haversine formula, the location based reminder system will calculate the distance between the user's saved location and the user's current location.

## II. LITERATURE SURVEY

There are many research papers based on the GPS system and location based service. Some of these that are reviewed are following:

The authors Vasileios Zeimpekis, George M. Giaglis and George Lekakos[1] proposed a technique based on location based services for indoor and outdoor positioning system to get the user's location. The services for location based system is based on wireless communication system with mobility. There also described the different types of location based services to get the actual location based on positioning technique for self positioning, remote positioning and wireless positioning technique.

Hierarchical location service for mobile ad-hoc networks the technique proposed by the authors Wolfgang Kie, Holger Fubler, Jorg Widmer and Martin Mauve[2]; describes the fundamental for Position-based routing for packet routing in mobile ad-hoc network. Hierarchical approach is the approach to routing the nodes on area that it occupies and by dividing it into a hierarchy of region. According to this the lowest level regions are called cells. Regions of one level are aggregated to form a region on the next higher level of the hierarchy. Regions on the same level of the hierarchy do not overlap.

The authors Jinyang Li, John Jannotti, Douglas S. J. De Couto, David R. Karger and Robert Morris[3] proposed a generalized techniques for getting the geographical location. They presented a paper based on this for a scalable location service for geographic ad hoc routing. describe the basic concept for Geographical location based service for distributed location service to track the mobile node locations. Consideration the problem of routing in large ad-hoc network for mobile host when geographical based location service. Also the efficiency and performance analysis in both case when nodes are not moving and when the nodes are moving.

MLS: An Efficient Location Service for Mobile Ad Hoc Networks presented by Roland Flury and Roger Wattenhofer[4]; describes the mobile location service for distributed location service to track the position of mobile nodes and to route messages between any two nodes. Propose an algorithm for cost calculation when the message is routed from one node to another and propose a lookup algorithm for routing the nodes.

The all above proposed technique for location based services are based on the message transmission from one node to another node. Here hierarchical based approach is also proposed with cost calculation for sending a message from one node to another. The distributed location based service is described that how to track the mobile location and route to transfer the message.

## III. OBJECTIVE

The aim to develop this system is to provide an interactive user friendly reminder system, based on their location. Also the system is responsible for user's security and privacy about their location. The current location

of the user's will be not share to any other and the saved location for reminders are used the user's mobile database. Because all details about the reminder location is saved into mobile database so no one can get the user's activity. So the privacy is high, about the user's activity.

#### IV. METHODOLOGY

The throughput and efficiency of the system is depend on the applying algorithm. Methodology part describes, to create the user's location clusters about their current location and the saved location to develop a reminder system.

- **Pseudo Code for creating "User Location Cluster"**

1. Get the user current location
2. Get all saved location of user.
3. Calculate the distance from current location with the user's saved location
4. If current location under the saved location.

Then

Add the location into primary cluster.

5. If the user cross the clustered location

Then

Remove the location from main cluster and add it to secondary cluster.

6. End.

The haversine formula is used to calculate to get the distance between user's current location and the saved location.

The haversine formula is as follows[6]:

$$hav\left(\frac{d}{r}\right) = hav(\varphi_2 - \varphi_1) + \cos(\varphi_1)\cos(\varphi_2)hav(\lambda_2 - \lambda_1) \quad \dots(1)$$

Where hav is haversine function[6]

$$hav(\theta) = \sin^2 \theta = \frac{1 - \cos(\theta)}{2} \quad \dots(2)$$

$d$  is the distance between the two points.

$r$  is the radius of the sphere(Earth).

$\varphi_1, \varphi_2$ : Latitude of user's current location and saved location.

$\lambda_1, \lambda_2$ : Longitude user's current location and saved location.

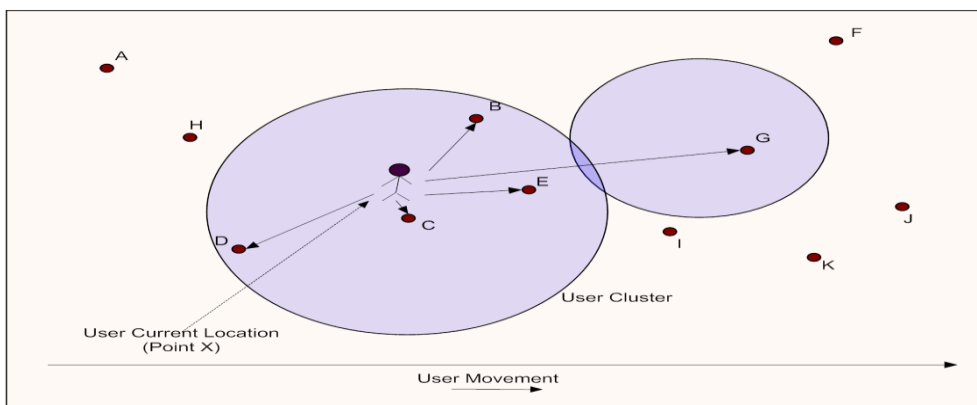
#### V. RESULT And DISCUSSION

Success and the failure of the every system is depend on the output the system. The output is depend on the applying algorithms, input and output. After successfully applying all the process and flow the "Location Based Reminder System", are generates the following outputs which are relevant to user:

1. Generate the "User Location Cluster" on the basis of current location and saved location which is calculated by the algorithm.

- ii. The Result are relevant to user. Means it will never give false reminder to user.
- iii. Because the steps of saving the location used the priority and distance based saving option of location so it will work long distance of reminder. Means the algorithm added all those location cluster which so far with users current location. this feature is best while we drive.
- iv. Also Provide security in terms of security of user's data.
- v. It will use the minimum bandwidth or data to retrieve the result, because there the data is saved in users mobile not in any server.

The Diagrammatical representation of generating the user's location cluster between the user's current location and saved location are following:

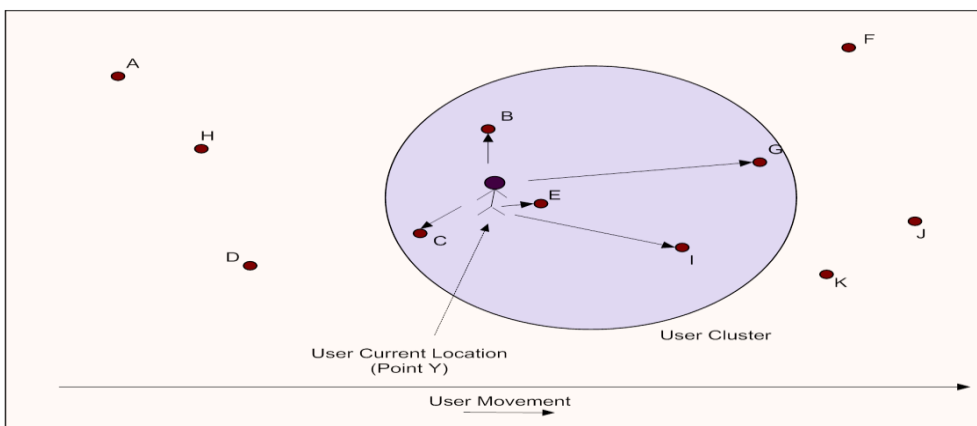


**Fig 1: User Location Cluster at point X**

In figure 1 The users current point is X and the A, B, C, D, E, F, G, H, I, J, K are the user's saved location for the reminder. When the user reach at the point X then the location C, D, E, B and G are added to cluster. Because the location G saved with the high priority the it will added to cluster, as seen in the figure location G is so far compare with the other although it added.

Now when the user moved from the current location(Point X) then some of the location which are added to cluster will be removed.

The Second process are shown in the bellow figure:



**Figure 2: User Location Cluster at point Y**

So when the user moved the location D will be removed and the new location I will be added to user location cluster.

Table 1: Result of notifying the no. of reminders in different round, while driving and walking.

Execution Round	No. of Reminder That Notify	
	While Driving	While Walking
Round 1	2	3
Round 2	3	3
Round 3	4	5
Round 4	3	4

**VI. CONCLUSION**

Location based reminder system provides an interactive service to its user. This system provide the security to user in terms of saved location data for reminder. The applied algorithm will give the quick response to the user in milliseconds when condition between the saved location and the current location are matched.

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