Location Based Task Reminder

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ABSTRACT: For human beings, it is not possible to remember all the things all the time. Reminders are the crucial part of our life. They assist us in doing day-to-day activities even once we are busy with another work. Although old-fashioned paper-based reminder has many features but they are inefficiently arranged. Location-Based Task Reminder is a humanoid application that's helpful to the user to remember all the tasks in line with their time and location. In this application, we have an operation and function that automatically alerts and notifies the user to remind them of our tasks on time and location. This method takes advantage of Google Maps API which might be found on any latest Smartphone. It also minimizes the trouble of the user and helps the user to finish their work on time without any inconsistency.

Keywords: Mobile Application, Android Task Reminder, Android Location-based reminder, GPS.

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1. Introduction

In the current busy manner, individuals have to be compelled to perform a range of the tasks in their day-after-day life like shopping, window spree, dry clean clothes, car wash etc. It is not easy to remember all the things all time sometimes we miss golden opportunity by not doing that important task so to handle this problem this application is designed in such a way that whenever user want to do specific task he can be reminded by the application by the notification as well as the voice reminder which tells the user that he/she has reached the desired location. In this application user will set the reminder by adding the task and the location on which user has to perform that task and the date on which the task has to be performed as soon as user set the reminder the location chooses by the user is marked so when the user reaches that location user will be reminded about the task.

There are two types of reminders -Reminders based on Time & Reminders based on Location. In this android application, both the functionality based on time and location is present. Our Android application uses Google Maps API [1] to take the user's current location. This system uses GPS for tracking the user location which will come in every Smartphone. All the user coordinates are stored in the broadcast receiver and these coordinates are matched with the coordinates of the set location.

In this application, Firstly, the user gives the task name and after that, it will enter the location name, date and set

the location in Google maps. After doing this user will click on the start button. As soon as start button is pressed the application gets the current coordinates of the user's location and start matching them with the desired location coordinates. The application reminds the user when the coordinates are matched. User is reminded the notification as well as the voice reminder. To fetch the current coordinates GPS service. To use this application, a smart phone should have reliable internet connection and GPS (Global Positioning System) Turn ON.

2. Existing System

The existing applications are developed to set reminders based on date and time. The problem with the system was that there is no synchronization between the reminder and the location where it has to be reminded. As when the user is not near that location the reminder alert is displayed and when the user is at that location the reminder does not work. For example, when you have to be reminded about getting shopping from the market [2]. At this time, the user cannot be sure when he/she will be near the market. So, a time and date reminder will not be successful here.

Some drawbacks of existing system are listed below:

- Difficulty is faced while entering the location.
- If the user not reaches on time then alarm does not triggered.

- Difficulty in editing and cancellation of task.
- Limited task can be set on one location.
- Inconvenient to use

3. Proposed System

The proposed system is not the time based reminder which is given by default in all the smart phones instead it works on the location that is provided by the user at which user has to perform some task so that when he reaches that particular location he/she will be reminded by the notification and the voice message. When the user sets the reminder, the GPS service provided by the Google start working and gets activated and the geofence is created around the desired location, the reminder gets triggered whenever the user enter the radii around the desired location. The user will not only receive the notification on the screen but also the voice message reminding user the he has reached his/her desired location.

This application reminds on the exact location on which task has to be done as this application continuously works in the background and tracks the user latitude and longitude and match them with the latitude and longitude of the location on which alarm has to be triggered. So this application needs battery optimization to be disabling to work more efficiently and finds the accurate location.

In this application when the user input the location it is suggested by the nearby location which makes this application more users friendly. This application has the

feature to set more than one task at the same location.

Advantages of Proposed System:-

- Location can be entered in the address form.
- User will be suggested nearby location while setting the reminder.
- User can edit the location and if it is not required than user can also delete the reminder
- Compact in design and easy to use.
- User can set multiple tasks on the same location.
- User will be notified by the notification and the voice message.
- Application will run in the background even after the application is closed.

4. Methodology

This application is built on android studio using android programming and android operating system, for GPS Google API is used in the application. Using Google API a map is shown on to the user on which the reminder has been set. User can set many reminders on the single place and all these reminders are stored in the Android Database. Using GPS current longitude and latitude are mapped to the latitude and longitude of the location where task needs to be performed and if the coordinates matches then alarm will be triggered. When the alarm triggered user will be notified by the text reminder as well as the voice reminder.
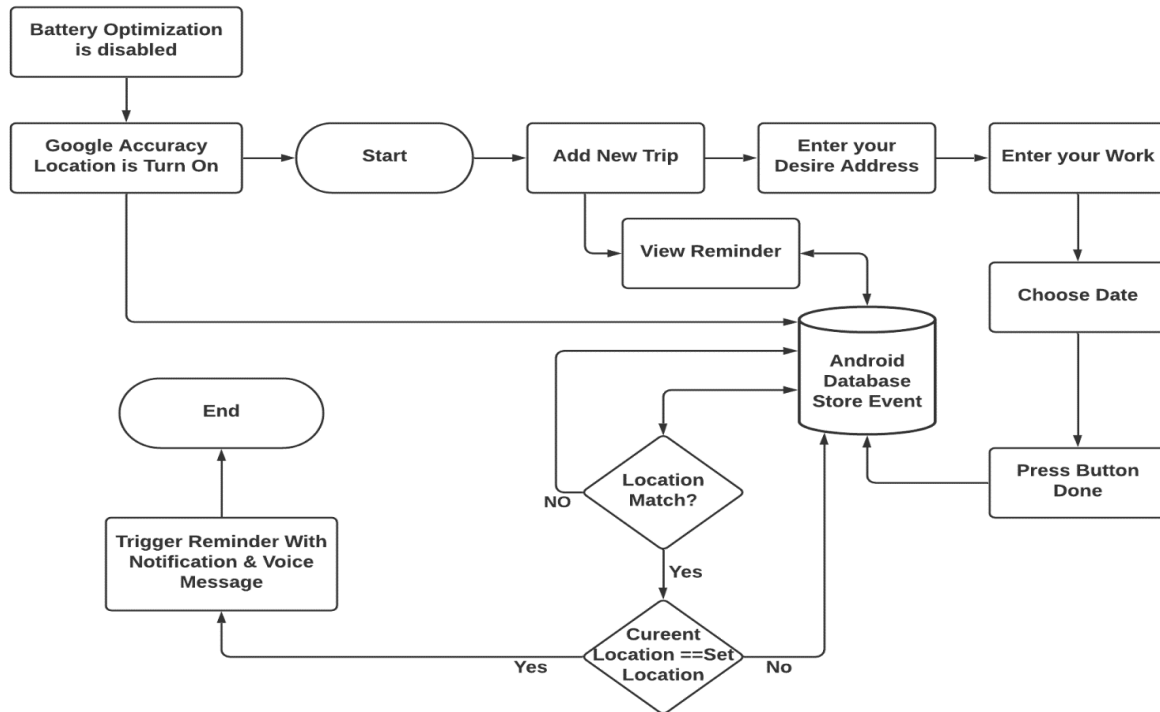
Fig 1: *Flow Diagram*

There are various steps that make up this reminder system. The system's flow diagram is shown in Figure 1.When the user start the app firstly he/she has to disable the battery optimization and turn on the Google accuracy location after that user has to set the reminder by adding the task name, and the date after providing these details user has to set the location by selecting in the Google map and finally press the set reminder button and by doing all this reminder is set successfully. When user reaches the desired location current locations coordinates will be matched with coordinates of location stored in the database, if the coordinates match then it will trigger the reminder with notification and task ends otherwise it will not trigger the notification. User will be reminded at the location by the notification and the voice message.
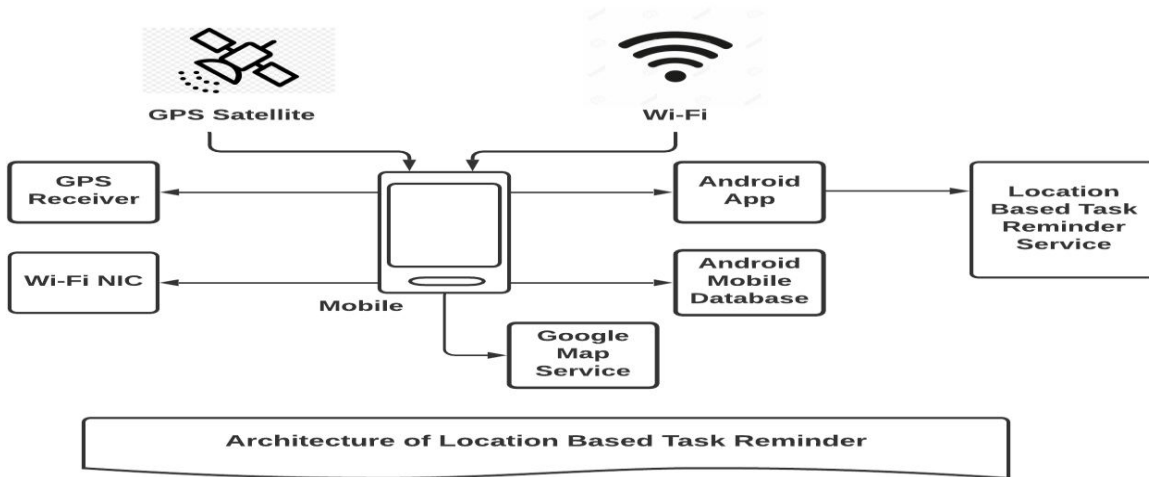
Fig 2: Architecture of Location Based Task Reminder

Figure 2 depicts the design of our location-based task reminder application. This programme makes use of four hardware/software components of the Smartphone, as shown below. A GPS receiver and a Wi-Fi network interface card are included into the Smartphone, allowing it to receive radio signals from GPS satellites and Wi-Fi access points simultaneously. Supported GPS measurements and, as a result, the information from the Wi-Fi APs to perform geolocation [4] to determine the user's current position. The data is designed to be used to store personal-meaningful places as well as location-based tasks, which are kept in distinct databases.

If the information contains a location-based task, the programme can compare the currently detected location to the task's placement [5]. The reminder will be activated once the user gets physically close to the designated area, reminding him or her of his or her duty.

Else

Continue;

  End

End

6. Output Screen

Following are the output screens which will be shown to the user after installing the application.

5. Algorithm: - Alarm Trigger Algorithm

User's Initial USER_LGTVALUE and USER_LTDVALUE;

While Longitude value! = NULL & Latitude value! = NULL do

If   Longitude value = = USER_LGTVALUE & Latitude value==USER_LTDVALUE

  Return Notification Alarm;
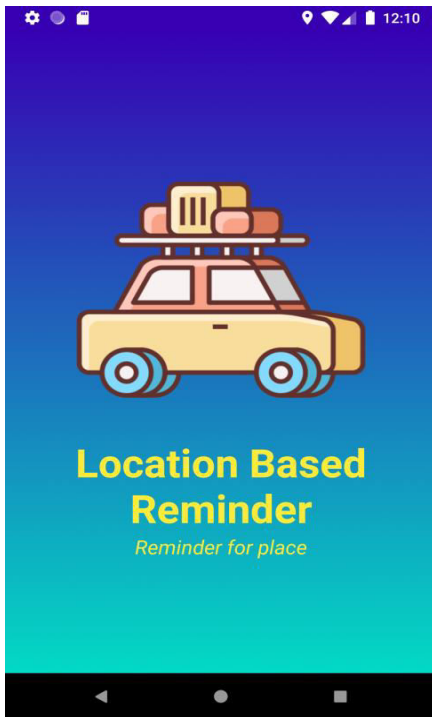
Fig 3: *Home Screen of the application*

When user install this application Fig3 will occurred as the Home Screen in the application and wait for the five seconds after that the user will be directed to the next screen as shown in the fig4 in which user have to perform two things to run the application successfully :-

(1) User has to disable the battery optimization.
(2) User has to turn on the Google accuracy location
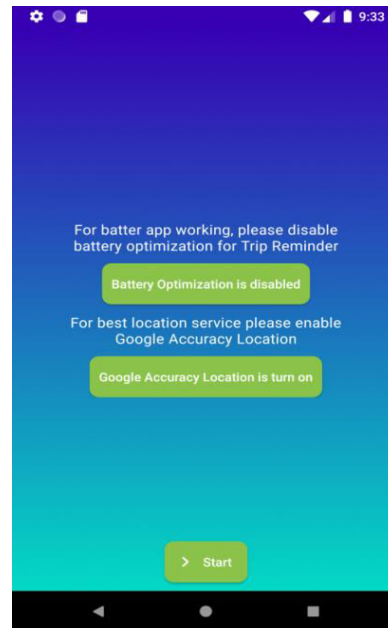
Fig 4: *User disables battery optimization and turn on Google Accuracy Location*

User has to disable the battery optimization for better app working as this application runs in the background even after closing the application so it consumes more battery. User has to also enable the Google accuracy location for best location service.
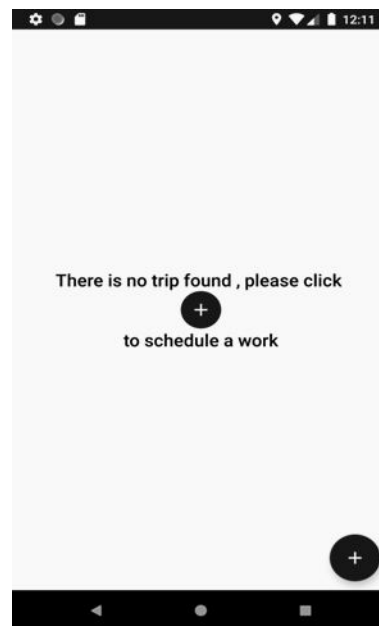
Fig 5: User will set the reminder

User will set the reminder by clicking the plus symbol button and it will be redirected to the next screen in which user will enter the input.
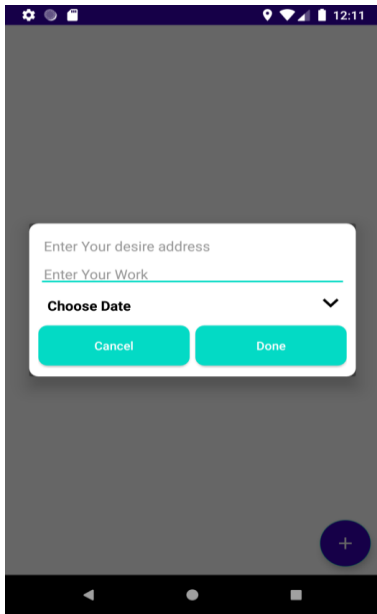
Fig 6: User will enter the location and work

User will enter the desired location on which alarm will be triggered and the work that has to be done on the desired location. User can also choose the date according to his reminder.
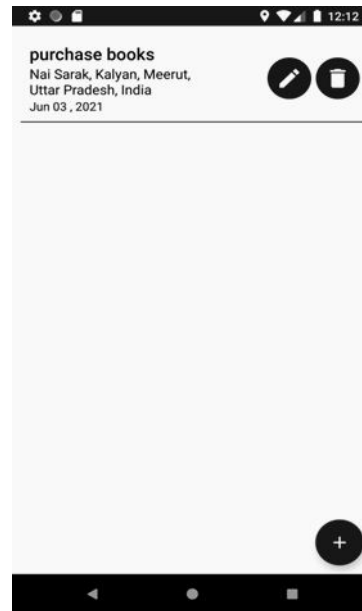
Fig 7: User can edit and delete the reminder

User can also edit the reminder and can change the desired location. Along with this user can also delete the reminder.

Fig 8: View of destination location

Geophone will be created around the destination and

location will be marked .As user enter the desired location alarm will be triggered and user will be reminded not only by the notification but also with the voice message.

6. Experimental Result Analysis:

Precision, recall, and F-measure were used to evaluate the performance of recognizing the right sites. Precision is the proportion of properly known locations over all properly known and unidentified locations, whereas recall is the proportion of thoroughly known locations over all properly known and unidentified locations. Suppose quantity of properly known location is C, W is the number of incorrectly identified locations and M is the number of unidentified locations, then $P = C/(C+W)$ is the precision and the recall R is given by $R = C/(C+M)$. Precision and recall are both included in F-measure. $F = 2PR/(P+R)$ is the F-measure. Preciseness P and recall R are both equally weighted.

The table below shows the F-measure value calculating the correctly identifying locations.

No of Places Visited	C	W	M	P	R	F
5	2	0	2	1	0.5	0.66667
10	5	0	4	1	0.55556	0.71429
15	7	0	6	1	0.53846	0.7
20	9	1	6	0.9	0.6	0.72
25	9	1	8	0.9	0.52941	0.66667
30	9	1	9	0.9	0.5	0.64286
35	11	2	10	0.84615	0.52381	0.64706
40	13	3	13	0.8125	0.5	0.61905
45	16	2	13	0.88889	0.55172	0.68085
50	17	2	13	0.89473	0.56667	0.69388
100	60	6	20	0.90909	0.75	0.82191
150	65	6	23	0.91549	0.73863	0.81761

The figure below shows the graph drawn between the number of places visited and the F-measure value
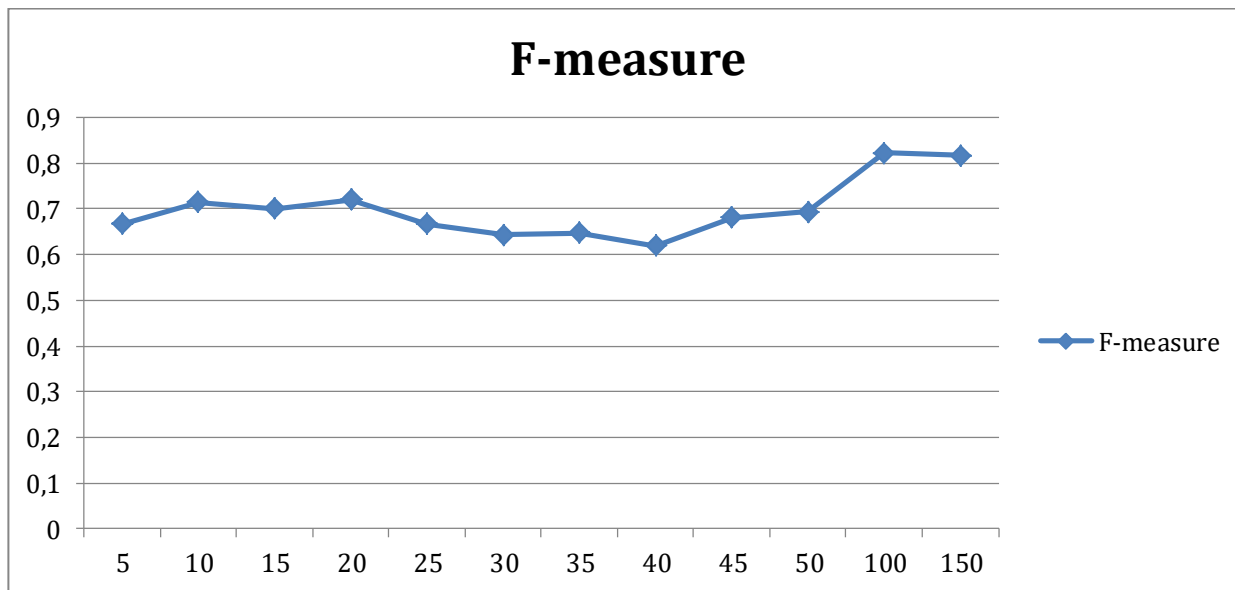
Fig. 6.1(a) *F-measure value for correctly identified locations.*

As the number of locations rises, the F-measure value also rises [6], indicating that the suggested methodology for correctly identifying location is very efficient. And also the less wrongly identified location and the unidentified locations are coming as the number of locations visited is increasing.

Following the implementation and execution of our system, we obtained the following results. The description after installing our Android application is shown in fig (3) below.

To build this system, we employed the Android programming language [7] and the Android operating system, as well as the Google API [4] to connect to GPS. While inputting the location for setting the reminder in the system, Google Maps provides services that immediately recommend adjacent locations in the search field.

7. Conclusion

People in today's society are extremely busy and frequently forget their responsibilities. People frequently recall the work after passing by a point of attraction. Returning to a specific spot is time consuming and exhausting. This application assists the user in locating a specific location. It helps even when the user is

driving/riding or busy in some other work as this application reminds the user not only by the text message but also with the voice reminder. Time is saved, and disappointment is avoided. If the user is unfamiliar with the current area, identifying desired neighboring places is at their fingertips. The application makes the search easy & faster. This research study is helpful in future as it can remind you the location within 100 meters of destination by voice messaging and notification for the task location.

8. References

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