An Implementation of User Speech Recogintion and Voice Command based Reminder Service integrated with location based reminder using GPS technology

Parth Doshi, Kaustubh Sakhare, Priya Pandey, Punit Dholu, Prof. Rohini Agawane

Computer Engineering
K J College of Engineering & Management Research (KJCOEMR)
Pune, India.

Abstract: Only time and date based reminder application are available in the market for mobile phones. A manual entry has to be made by the user for setting up a reminder. A text popup and sound frequency alarm will be generated when the device time and date match with the date and date set by the user for any reminder. Sometimes the user is aware about the location where he wants the reminder rather than the time and date. But while setting up many reminders the user will not be aware about the time and date, but he will be aware about the location where he wants the reminder. Some reminders are location personified rather than a particular date or time. In this project we have designed an application which will enable the user to set location based reminder with the ease of voice commands.

Keywords: Speech Recognition, Voice Reminders, GPS based Location Reminders.

I. INTRODUCTION

The main purpose of voice and location based services is to provide users the comfort of easy assigning and retrieval of user required reminders. The unique concept we are implementing in our application would help users set quick reminders by using voice and speech recognition. The ease of reminder retrieval through the use of Global Positioning System (GPS) based on users location and also through current date and time.

The current state of location based and speech recognition services unfortunately are very rigid as they cannot make good use of all the available information.
In this application users are allowed to set the reminders through voice. That voice gets converted into text through speech recognition technique, to get stored into the database.

Speech recognition can be termed as the translation of spoken words into text. It can be also known as automatic speech recognition i.e. ASR, computer speech recognition, speech to text i.e. STT. Speech Recognition is a robust technology that can translate spoken words into text.

Through this paper we raise all the challenges and develop architecture which will enable practical realization of location based services and voice based reminders. Then we further illustrate the key issues and problems in the architecture and discuss corresponding solutions for the same. The basic idea of our architecture is to merge various information in our mechanism. In reminder services applications, the service is the one who needs to decide whether to post or not to post messages to user according to the detected user's location.

II. PROPOSED SYSTEM

Every user of a cell phone would surely use a reminder service for remembering his tasks or important dates such as appointments, birthdates or anniversaries which one is bound to forget being busy with his daily chores.

Here, in this project we try to make the task of setting up and assigning reminders and also its retrieval as easy as possible for the user. The hassle of traversing the phone till the calendar date and time and typing the entire reminder is removed totally. A user can set up a reminder by voice commands that may consist of a word a phrase or a sentence. He also would be able to select the date and time of when he wants to be reminded of by using speech which very clearly makes reminder setting a fast and simple but reliable task. We have also integrated location setting for reminders which will make it more personified and specific. The user by this will be able to set a location to any reminder that he wishes too. By doing that the reminder will get retrieved when the date occurs or when the user is in the location set for the reminder, whichever is first.

III. SYSTEM ARCHITECTURE

In our system we have proposed user speech recognition and voice command based reminder service integrated with location based reminder using GPS technology.

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Figure 2 : Use of web services

Web service is a communication method through which multiple users can access the services provided by the service provider in a single network. We must connect server (web services), and different mobile phones in a single network. Web services have to be initiated and activated prior to executing the application failing which the application won't work.

B. Offline Reminders:
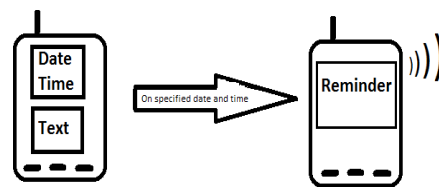
Figure 3 : Offline reminder service

For setting up a normal reminder we need to say the date, time and text or also can type it manually, which we want to specify as a reminder and then on specified date and time reminder will pop up.
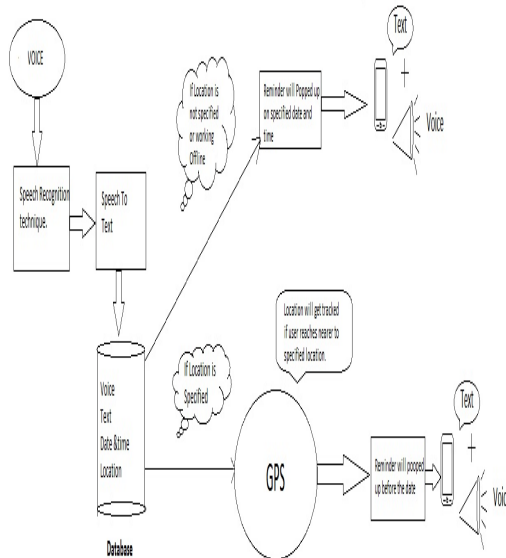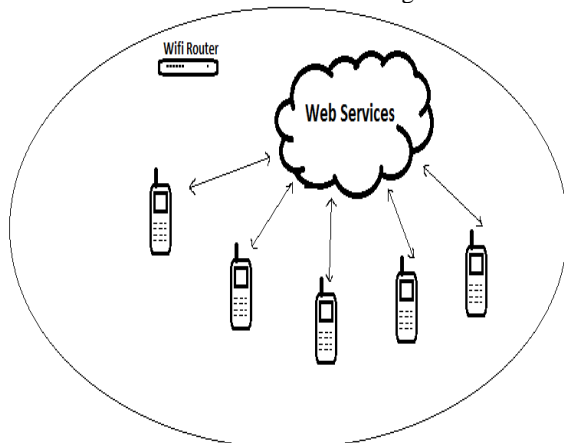
Figure 1 : The System Architecture of the Proposed Model

IV. IMPLEMENTATION

A. User Registration

User registration is a process which we use to register the users on a server. For that, user will have to provide Name, Email ID and Contact number to the server and then the server will accept the users request by accepting the information provided by user. IMEI number is also read to avoid ambiguity. On the server we are using "web services" which allows registered users to communicate with each other through the server.

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C. HMM (Hidden Markov Models) Algorithm for Voice to text conversion

The following algorithm is used in our application:-

1. Declare the states and observations
N=states{'S1','S2',....'Sn'}
state name=S1
T=Observations{'O1','O2',....,'On'}

2. Taking Initial Probability for all states
$Q_{i=1...N}$ =emission parameter for an observation associated with states
where i=1...N(All states) stored in Matrix [k]*[N]
'S1':{O1=value1,O2=value2,...,On=value n}

3. Calculate the probability of transition from one state(i) to another state(j)
$Q_{i=1...\ j=1...N}$ stored in Matrix [K]*[K]

4. After all transition probability is achieved, we calculate the probability of each activity (observation) from each state.
T1[i,j] stores the most likely path so far for a particular state.
Calculate that by:-
T1[i,j]=max[T1,(k,j-1).A_{ki},B_{iy}]   where B_{iy} is constant.
$$\partial t(t) = \max\ p[q1, q2,..qt = t, O1, O2, ... Ot\ |r]$$
where q1,q2,...qt: states
O1,O2...On: observations.

The state which has the maximum probability for an observation is likely to perform that activity on a given time instance.

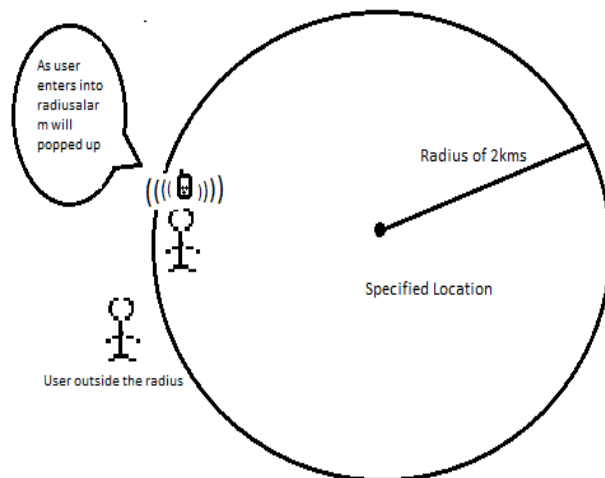### D. Location based reminders (Online reminders) :-

Figure 2 : Location based Reminders

Location based reminder is a system which helps to remind you about the activity based on the location mentioned. While setting up the reminder we are accepting a location along with date and time. Once reminder is scheduled, the application will keep checking your location after some specific time say 5 minutes. In our application the area radius is already specified (2kms) to get a reminder. Once you enter that particular location the application will get its coordinates through Google maps and it will keep checking the saved coordinates. If user enters into the 2 km radius from the mentioned location before specified date and time then the alarm will pop up.

V. CONCLUSION AND FUTURE SCOPE

The project is having a wide scope of use just as much as further enhancements can be made in it. In the near future we can add various modules like contact based reminder by adding methods to link particular contacts (people) to reminders mostly personified for remembering birthdays , anniversaries or any such dates likewise.

We can also include features like sending reminders to friends or other users having the application or also send reminders via electronic mail or short message service (SMS) to users not using this particular application. Voice service can also be used to call out names of contacts whose phone call or text message has been received by the user. For Example – If a user receives a text message from a contact called "ABC" then the phone alerts the user by a voice note saying "Text message from ABC". Such features will even make it easier for the users to share reminders amongst family or friends and also be notified on whose call or message has he received at that instance of time.

This application will be very useful for people of all age groups making their tasks as easy as possible. Instead of wasting time in writing text for setting reminders, let's make it easy by voice commands and obtain easy retrieval on current locations, date and time.

VI. ACKNOWLEDGEMENT

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