

User Speech Recognition 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.
parthdoshi6969@gmail.com

Computer Engineering
K J College of Engineering & Management Research (KJCOEMR)
Pune, India.
kaustubh.sakhare9@gmail.com

Computer Engineering
K J College of Engineering & Management Research (KJCOEMR)
Pune, India.
ppriyapandey93@gmail.com

Computer Engineering
K J College of Engineering & Management Research (KJCOEMR)
Pune, India.
punitdholu1@gmail.com

Computer Engineering
K J College of Engineering & Management Research (KJCOEMR)
Pune, India.
agawane.rohini@gmail.com

Abstract: Every user reminder application available in the market for mobile phones is time and date based. Also, the user has to make a manual typed entry for setting up a reminder. On the reminder being ON, the device constantly tries to match the device time and date with the saved reminder time and date, and the user will be alerted by a text pop up and an optional sound frequency alarm if it is a match. 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 which would be a vast and very useful application, we have tried to design an application which helps the user in setting up easy reminders by using voice commands and which gives alerts about the reminder when he enters into the geographical sector specified in the reminder by the user.

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. BACKGROUND AND RELATED TECHNOLOGIES

A. Speech Recognition

Basically, the microphone converts the voice to an analog signal once it is recorded. Input from user is also known as utterance that is Spoken input from the user of a speech application. An utterance can be a single word, an entire phrase, a sentence or even several sentences. Accuracy and optimization of speech recognition systems differ in vocabulary size and confusability, modality of speech which can be isolated, discontinuous or continuous speech, read or spontaneous speech.

A speech recognition system^[1] can be categorized into several blocks like feature extraction, acoustic models database which is built based on the training data, dictionary, language model and the speech recognition algorithm.

An analog speech signal must be sampled first on time and amplitude axes. Samples of speech signal are always analyzed in even intervals. This period is mostly 20 milliseconds because signal in this interval is considered stationary. A dictionary is used to connect acoustic models with vocabulary words for better precision. The language model reduces the number of acceptable word combinations based on the rules of language and statistical information from different texts.

Speech recognition is always processed in middleware; the results are then transmitted to the user applications which need it. In computer science and engineering, speech recognition basically is the translation of spoken words into text.

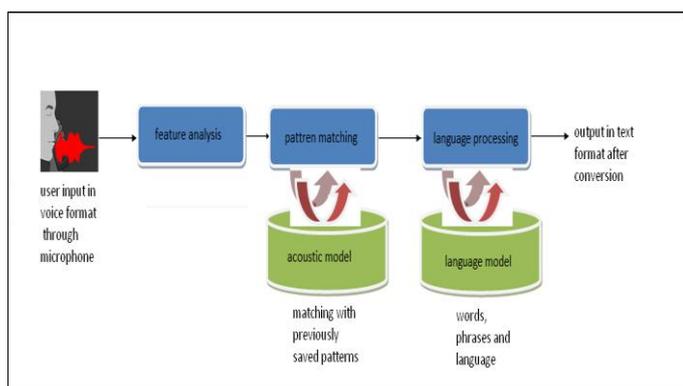


Figure 1 : Speech recognition

B. Location Based Services

Location Based Service (LBS) is a mobile service that has the capability to provide enhanced real time information based on the user's location. Geographical Information System (GIS) has been the core of LBS in order to provide all the functionalities in LBS. First, we may send location information. These sets of

services are most commonly used today in location tracking applications. While sending location information to remote parties for location tracking the locations are usually represented in geospatial coordinates (Longitude and Latitude) or civil addresses for tracking. We can expect more variety of location-based services due to this emerging technology.

A location-based service is a software application for a mobile device that wants knowledge about where exactly the mobile device is located. Location-based services can also be query-based and it can also provide the user with useful information such as "Where is the nearest Petrol Pump?" or they can be push-based or other marketing information to customers who need it and who are in a specific geographical area. An LBS requires 5 components viz: the service provider's software app, a mobile network which can transmit data and requests for service, a provider which can supply the user with geo specific information for use, a positioning component for positions and the end user's mobile device for overall use. Location-based services must be permission based. This means that the user must choose the service in order to use it and obtain its benefits. In most cases, this means installing the LBS application and then accepting a request and gain permissions from the user to allow the service to know the user's device's location.

C. GPS and Google Maps

With location positioning system such as GPS becoming extremely popular, there is a vast growing demand for location-based applications in the market. It is easier, these days to utilize all the available map information by connecting GPS receiver. Corresponding to this, the GPS receivers are now embedded into mobile phones and all the applications using the location of the user in real-time are widely available in the android market. GPS chips are now included in nearly all devices to analyze satellite signals and determine the exact user's location with high accuracy. In a large social event, such as a big conference or a similar event, since people come to communicate and talk with each other, they are more likely to release their location information and the location services provided.

The GPS satellites revolve around the earth two times a day in a defined orbit and transmit signal information to the earth. GPS receivers on earth take this information and calculate the user's exact location for further use. The GPS receiver compares the time at which the signal was transmitted against the time it was received. With distance measurements from a few more satellites in the orbit, the receiver can determine the user's exact position and display it.

A GPS receiver has to be locked on to the signal of at least three satellites for it to calculate a 2Dimensional position which consist of latitude and longitude. With four or more satellites connected, the receiver can determine the user's 3Dimensional position which consist of latitude, longitude and altitude. After the user's position has been found, the GPS can also calculate

other information, such as speed, track, distance to destination and even more.

III. EXISTING SYSTEM

The current situation for a reminder app in any android phone is text based. The user has to traverse through the calendar and first find the date where he wants to put up a reminder. Only after that he can set up a reminder by manually typing everything he wants to get reminded about including the venue. The time at which he wants to get reminded at also has to be set. This will consume a lot of time which the user might not be able to spare at that particular moment. After the reminder is set it will check with the date and time of the phone and the remainder will only be retrieved when the date and time matches. User might have a task to do in a particular location which he would like to be reminded of. For example – User might have to handover a cheque to a person living in a particular geographic area. The user might pass that area but not remember his task and the reminder set will only be retrieved at the previously set date and time and not by current user location.

IV. 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.

V. 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.

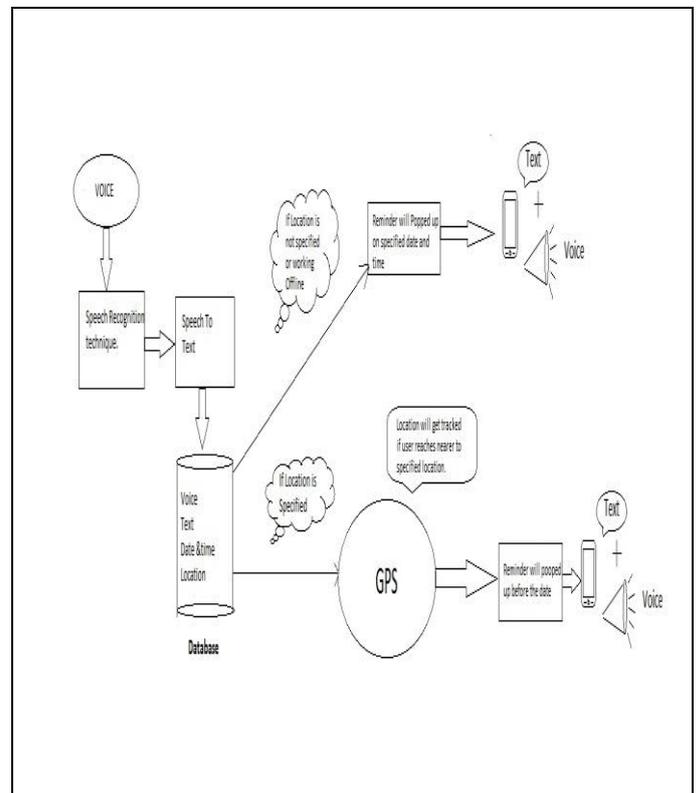


Figure 2 : The System Architecture of the Proposed Model

VI. 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.

ACKNOWLEDGEMENT

It is indeed a moment of great pleasure & immense satisfaction for us to express our sincere thanks and sense of profound gratitude & indebtedness to all the people who had a helping hand in making our project a successful venture.

Nothing crystallizes in our mind except the indefatigable enthusiasm & personal interest of our Prof. D. C. Mehtre(HOD Comp.)and our project guide Prof. Rohini Agawane. Our sincere thank to them as their profound knowledge, encouragement & constant motivation have been immense help.

Above all we express our deepest gratitude to all of them for their support, which helped directly or indirectly in completing our project. They offered plenty of opportunity while working with them, rendered us in valuable help & helped us linking project practical knowledge with theoretical with one taught to us in our college.

REFERENCES

1. International Journal of Advanced Research in Computer Science and Software Engineering - Speech Recognition as Emerging Revolutionary Technology Volume 2, Issue 10, October 2012 ISSN: 2277 128X Parwinder pal Singh Computer science &Engg IGCE, PTU Kapurthala & Er. Bhupinder singh Computer science &Engg IGCE, PTU Kapurthala.
2. B. Raghavendhar Reddy, E. Mahender / International Journal of Engineering Research and Application (IJERA) ISSN: 2248-9622 www.ijera.com Vol. 3, Issue 1, January - February 2013, Speech to Text Conversion using Android Platform by B. Raghavendhar Reddy, E. Mahender, Department of Electronics Communication and Engineering Aurora's Technological and Research Institute Parvathapur, Uppal, Hyderabad, India. 2Asst. Professor Aurora's Technological and Research Institute Parvathapur, Uppal, Hyderabad, India.
3. International Journal of Advanced Research in Computer and Communication Engineering Vol. 3, Issue 1, January 2014 Copyright to IJARCCCE www.ijarccce.com 4982 Location Based Services on Smart Phone through the Android Application by Prof. Seema Vanjire, Unmesh Kanchan, Ganesh Shitole & Pradnyesh Patil.
4. Android SDK <http://developer.android.com/sdk/>
5. Speech Recognition for Robotic Control by Shafkat Kibria December 18, 2005 Master's Thesis in Computing Science, Supervisor at CS-UmU: Thomas Hellström, Umeå University, Department of Computing Science, SE-901 87 UMEÅ, SWEDEN.
6. Speaker Recognition for Mobile User Authentication by K. Brunet, K. Taam, E. Cherrier & C. Rosenberger hal-00848318, version 1 - 25 Jul 2013 ,(SAR SSI), France (2013)