

Voice Commander Android App

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Abstract- The Speech is most essential & primary mode of Communication among of human being. Today, speech technologies are commercially available for an unlimited but interesting range of tasks. This paper highlights the importance of human voice that activates apps on android phone. The main objective of Voice Commander App is, it let you to control your phone using voice. Voice commander needs to do everything for you hands free, so you don't have to touch the device. The user makes use of voice commands to perform certain actions such as to make and receive calls, install/uninstall apps, GPS Navigation, etc. With this voice recognition technique accuracy of more than 90% is achieved. The usage of android applications is becoming more and more popular. In this manner, we can easily say that such kind of application can really help the people to make their life easier.

Index Terms- Android, Bluetooth, GPS.

1. INTRODUCTION

The main objective of Voice Commander App is to let user to operate his/her phone using voice. The Android app requires the user to speak the password to unlock the app, then the app becomes active for all users commands. This app will then run in background. User will have to speak the command in order to perform required operation. The application then sends a command to a database. This will be used by the Database Management System to determine whether the inputted command is valid or not. If the command is valid the application will perform the desired operation and it will give the user feedback, informing the user that operation is successfully performed. In case the command is not found or if the user enters an invalid command the app will return a NULL result which will cause the Android app to give speech feedback to allow user to enter another command. This Android app will also be able to operate from a distance range with the help of Bluetooth headset. The app will have preinstalled list of commands for call, install/uninstall app, launch/close app, navigation etc. User can view the list of commands and user will be able to change the command.

1.1. Types of Speech

Speech recognition system can be separated in different classes by describing what type of utterances they can recognize.

1.1.1 Isolated Word

Isolated word recognizes attain usually require each utterance to have quiet on both side of sample windows. It accepts single words or single utterances at a time .This is having "Listen and Non Listen state". Isolated utterance might be better name of this class

1.1.2 Connected Word

Connected word system are similar to isolated words but allow separate utterance to be "run together minimum pause between them.

1.1.3 Continuous speech

Continuous speech recognizers allows user to speak almost naturally, while the computer determine the content. Recognizer with continues speech capabilities are some of the most difficult to create because they utilize special method to determine utterance boundaries.

1.1.4 Spontaneous speech

At a basic level, it can be thought of as speech that is natural sounding and not rehearsed .an ASR System with spontaneous speech ability should be able to handle a variety of natural speech feature such as words being run together.

2. LITERARURE SURVEY

2.1. Existing Systems

Many Android applications are available which allow the user operate his/her phone by voice, but the phone should be in front of user. But there is no application that can operate phone from the distance using the Bluetooth headset.

Many voice recognition apps requires internet for speech recognition, but this app will be independent of internet for speech recognition. Internet will be only used to perform operation like surfing, Navigation etc.

2.2. Proposed System

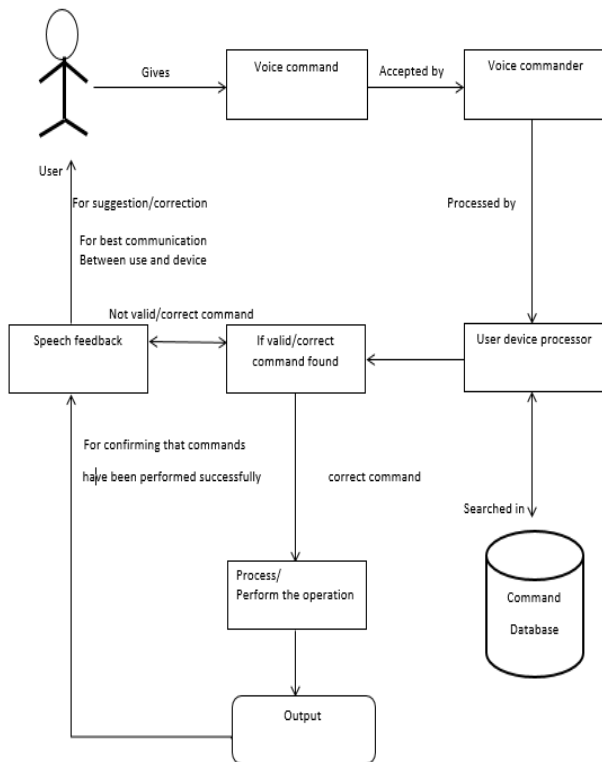


Fig 1. Block diagram of Voice Commander App

The following steps are performed:

- 1) The user will have to give voice command.
- 2) Voice command will be accepted by Voice Commander app
- 3) Voice Command will be processed by processer
- 4) The command will be searched in database.
- 5) If the command is present in database the particular operation will be performed and feedback will be given to user.
- 6) If the command id invalid user will be asked to re input the command.

Using Voice Commander we can use the following features:

- Inputting the command is made easy.
- No need of internet for performing operations except for GPS Navigation and web surfing.
- User will have an option to link the applications according to his/her choice.
- User can update the commands.
- The app has Bluetooth headset support, so the app can be operated from the distance range.
- Is simple, can be used by everybody from young to old.

3. FEATURES OF APP

- Receive/make any call with voice command from the smart phone.
- Install & uninstall any application.
- Launch & close any applications
- Navigation.
- Mobile Data, Wi-Fi, Bluetooth etc.
- Web Search.

4. FUNCTIONING OF APP

With the mobile application, the users will be able to call, navigate, surf internet, and launch apps with the help of voice. User can view the list of preinstalled commands. User will be able to change the commands.

- 1) Calling: *phone key-word* + *contact key-word*
Example: "call john"
- 2) Launching apps: *launch app key-word* + *app key-word*
Example: "launch mail"
- 3) Navigation: *navigation key-word* + *destination*
Example: "navigation New York Aberdeen street"

5. METHODOLOGY

5.1. Working of Speech Recognition

Basically, the microphone converts the voice to an analog signal. This is processed by the sound card in the computer, which takes the signal to the digital stage. Input from user is also known as utterance (Spoken input from the user of a speech application. An utterance may be a single word, an entire phrase, a sentence, or even several sentences.)This is the binary

form of —ls and —0slthat make up computer programming languages. Computers don't —hear sounds in any other way. Sound-recognition software has acoustic models (An acoustic model is created by taking audio recordings of speech, and their text transcriptions, and using software to create statistical representations of the sounds that make up each word. It is used by a speech recognition engine to recognize speech) convert the voice sounds to one of about four dozen basic speech elements (called phonemes). The latest versions of speech technology have been refined so that they eliminate the noise and useless information that is not needed to let the computer work. The words we speak are transformed into digital forms of the basic speech elements (phonemes). Once this is complete, a second sector of the software begins to work. The language is compared to the digital —dictionary that is stored in computer memory. This is a large collection of words, usually more than 100,000. When it finds a match based on the digital form it displays the words on the screen. This is the basic process for all speech recognition systems and software.

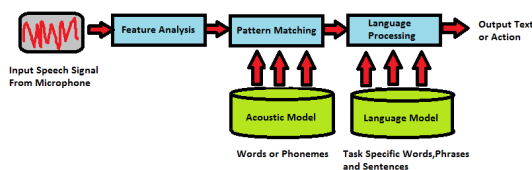


Fig 2. Speech Recognition Process

5.2. Types of Speech Recognition System

5.2.1 Speaker dependent

A number of voice recognition systems are available on the market. The most powerful can recognize thousands of words. However, they generally require an extended training session during which the computer system becomes accustomed to a particular voice and accent. Such systems are said to be speaker dependent. A speaker dependent system is developed to operate for a single speaker. These systems are usually easier to develop, cheaper to buy and more accurate, but not as flexible as speaker adaptive or speaker independent systems. Speaker-dependent software Work by learning the unique characteristics of a single person's voice, in a way similar to voice recognition. New users must first "train" the software by speaking to it, so the computer can analyze how the person talks. This often means users have to read a few pages of text to the computer before they can use the speech recognition software

5.2.2 Speaker independent

A speaker independent system is developed to operate for any speaker of a particular type (e.g. American English). These systems are the most difficult to develop, most expensive and accuracy is lower than speaker dependent systems. However, they are more flexible. Speaker-independent software is designed to recognize anyone's voice, so no training is involved. This means it is the only real option for applications such as interactive voice response systems — where businesses can't ask callers to read pages of text before using the system. The downside is that speaker-independent software is generally less accurate than speaker-dependent software.

5.2.3. Speaker adaptive

A third variation of speaker models is now emerging, called speaker adaptive. Speaker adaptive systems usually begin with a speaker independent model and adjust these models more closely to each individual during a brief training period.

5.3. Methods used for Speech Recognition

Following methods are used for Speech Recognition

1. protected abstract
void onCancel (RecognitionService.Callback listener)
 • Notifies the service that it should cancel the speech recognition.
2. protected abstract
void onStartListening (Intent recognizerIntent, RecognitionService.Callback listener)
 • Notifies the service that it should start listening for speech.
3. protected abstract
void onStopListening (RecognitionService.Callback listener)
 • Notifies the service that it should stop listening for speech. Speech captured so far should be recognized as if the user had stopped speaking at this point. This method is only called if the application calls it explicitly.
4. public void beginningOfSpeech ()
 • The service should call this method when the user has started to speak.
5. public void bufferReceived (byte[] buffer)
 • The service should call this method when sound has been received. The purpose of this function is to allow giving feedback to the user regarding the captured audio.

6. public void endOfSpeech ()
 - The service should call this method after the user stops speaking.
7. public void error (int error)
 - The service should call this method when a network or recognition error occurred.
8. public void results (Bundle results)
 - The service should call this method when recognition results are ready.

Recognition System, International Journal of Advanced Research in Computer Science and Software Engineering Volume 4, Issue 7, July 2014

- [6] Suma Swamy, K.V Ramakrishnan, AN EFFICIENT SPEECH RECOGNITION SYSTEM, Computer Science & Engineering: An International Journal (CSEIJ), Vol. 3, No. 4, August 2013

6. CONCLUSION

Voice Commander App is stimulated using Android Studio and it has been coded in java language. This paper introduces the basics of speech recognition technology and also highlights the difference between different existing system and proposed system. In this paper the most common methods which are used to do speech recognition are also discussed. This project concept can be utilized to make maximum use of speech detection for a particular device.

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REFERENCES

- [1] Parwinder pal Singh, Er. Bhupinder singh: Speech Recognition as Emerging Revolutionary Technology. International Journal of Advanced Research in Computer Science and Software Engineering Volume 2, Issue 10, October 2012
- [2] Santosh K.Gaikwad, Bharti W. Gawali, Pravin Yannawar, A Review on Speech Recognition Technique, International Journal of Computer Applications (0975 – 8887). Volume 10– No.3, November 2010
- [3] Om Prakash Prabhakar, Navneet Kumar Sahu: A Survey On: Voice Command Recognition Technique. International Journal of Advanced Research in Computer Science and Software Engineering, Volume 3, Issue 5, May 2013
- [4] Shally Gujral, Monika Tuteja, Baljit Kaur, Various Issues in Computerized Speech Recognition Systems, International Journal of Engineering Research and General Science Volume 2, Issue 4, June-July, 2014
- [5] Miss Himanshu, Sarbjit Kaur, Vikas Chaudhary, Literature Survey on Automatic Speech