Android Text To Speech Conversion Synthesis

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ABSTRACT: Speech Synthesis is one of the most leading areas in Natural Language Processing (NLP). This is also known as “Text To Speech (TTS)” and is mainly the capability of device to “speak” text in different languages. This application acts an interface between two different representation of information, namely text and speech. Our main objective is to make an application of speech synthesis for Android based mobile phones. We have developed an application on the Android environment and the voice conversion libraries environment has been used. The application developed is user friendly and reliable and effective communication is performed. An application with interfaces that makes use of voice has a unique appeal. They tend to make users feel that they are using something futuristic. Since its early days, Android has had very robust text-to-speech (TTS) functionality. We have designed an application that can receive text messages and read them to the user.

KEYWORDS: Natural language processing, text-to-speech, broadcast receiver, conversion library.

I. INTRODUCTION

Speech Synthesis is one of the major applications of NLP. We have developed an application using Android Operating System. Android is an open source OS developed by Google and is widely used with several types of embedded and mobile platforms, including mobile phones and tablets. There are several researches' results into the implementation of applications for voice messaging into text messages And since last few year developers have designed and developed varieties of applications with variabilities for mobile devices, automatic reading machines etc because speech and voice recognition system.[5] Not been used in the field of computer and electronics. Due to the complexity and variety of speech signals and sounds. Now a day's mobile phones are widely using and passing through under rapidly changes, and SMS is one of the vital applications.[4] In this paper we are attempting vice versa that is from text messaging to voice message. We believe that such type of efforts will be helpful into the interfacing between the communication devices with different aspects. We can process text and recognized into speech signals smoothly. In this paper we are converting text messaging into the voice message. Such type of application can act as a bridge between two different entities for communication that is from text to voice messages.[3]This type of work can be helpful for those persons who blind by means of if they are handicap. It is associated with mobile device (Android platform) that everyone can be used depend upon his need. Handling your phone, especially reading text messages or responding to them while driving is one of the primary reasons for a lot of road mishaps all around the world. Hence, it shouldn't come as a surprise that the police of many countries are really cracking down on the use of phones while driving. Everything on your phone is really a distraction, be it your navigation, music player, having a conversation or texting. Many people will ask how to read text messages or are there any apps to read text messages out? One way to eliminate some of the distractions is to have your phone read text messages out aloud. We have developed an Android Application Auto SMS Reader which is the simplest and an application that reads out loud (text-to-speech) incoming text messages with caller id! It is completely
hands free and free of cost!!! And you can use it while you are driving, charging, sleeping, playing video games, cooking, browsing the internet...etc

II. IMPLEMENTATION AND DESIGNING

Our software is called the Auto SMS Reader, a simple application with the text to speech functionality. The system was developed using Java programming language. Java is used because it’s robust and independent platform. The application is divided into two main modules - the main application module which includes the basic GUI components which handles the basic operations of the application such as acknowledging received SMS on Android Phone. This would make use of the BroadcastReceiver. [6]The second module, looks up for the contact of the sender if available in the contact list of the Android Phone and then displays SMS along with the name of sender if available and finally reads the SMS received aloud using TTS.

Functional Requirements:
This application contains two important Modules:
SMS Receiver:
    Be able to recognize SMS received by the Android phone
    Be able to handle phone state to ring automatically
SpeakSMS:
    Speak SMS received depending on the state of toggle button
Non-Functional Requirements:
    • Reliability: This application is reliable and can be extended with many other features available on physical device.
    • Maintainability: This project has been built in Java so it is easy to maintain and economical also.
    • Portability: This project is built in Java and hence can be used in any device which used Android OS.

Stepwise Procedure to implement the application:
2. Set the Minimum required SDK to Android 2.2 and Target SDK to Android 4.4
3. Create an Empty Activity
4. Made changes in Manifest to provide three permissions:
   a. RECEIVE_SMS : to know that the device has received a SMS
   b. READ_SMS : to read the received SMS
   c. READ_CONTACTS: to map the phone number of the sender if available in contact list of the Android phone.
5. Set the Portrait Orientation for the application.
6. Made changes to strings.xml to define all the strings used in the application
7. Made changes in the Layout
8. Used the following components for the application layout.
   a. TextView: for displaying name of the person who has sent you the latest SMS.
   b. TextView: for displaying actual contents of the latest SMS.
   c. ToggleButton: to switch ON/OFF the speech output.
9. This class has implemented OnInitListener interface to know when the TTS Engine is ready. [7]
10. We have modified init method of OnInitListener interface which is called when the TTS engine has been initialized. The status parameter of this method has been used to know whether initialization process was successful or not.
11. Once the initialization is successful we have define the English (US) as the language of the TTS Engine.
12. We have then updated code for speak method to read out any text that is passed to it.
13. Also pause method has been added to play silence for a specified duration so that pauses are added to the speech to make it sound a little clearer.[9]
Finally destroy method has been used to free up resources when the TTS engine is no longer needed.[1]

In the MainActivity class we have used the method checkTTS to check if a TTS engine has been installed on the device. If no TTS engine is installed, the user is redirected to install the same.

We have used BroadcastReceiver to deal with the incoming messages of the Android phone.

Before use of BroadcastReceiver it was registered using the method registerSMSReceiver.

Whenever there is any new message, we had called onReceive method. The messages are parsed using the class SmsMessage.

After parsing the message the methods getDisplayMessageBody and getOriginatingAddress has been used to extract meaningful information out of it.

With this information, we have generated the text that the TTS engine should read out.[8]

We have used method getContactName to extract the phone number of the sender from the message. This method returns name of the sender if the phone number is available in the contact list of the user [2].

Finally onDestroy method of the activity has been used to unregister the receiver and shut down the TTS engine to free up resources.

The app was tested after compiling and running it on physical Android device.

When the Toggle button was tapped to enable ice and SMS is sent from another phone, are able to hear our phone read out SMS received.

After implementing all above procedural steps Fig 3 will be synthesized.

III. CONCLUSION

So we have created a simple Android application an Auto SMS Reader a simple app—with a minimalist user interface—that can receive text messages and read them to the user aloud depending on the status of the toggle button.

REFERENCES


