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Voice Assistance for Visually Impaired People Using Natural Language Processing

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Abstract: As the use of mobile devices is expanding and affecting various aspects of human life, the number and smartphone users is dramatically increasing. Consequently, the robustness of interaction between smartphone and human is essential for better system performance. By using the speech synthesizer technology for the android, the application presents the modality of text-to-speech responses on android device. In user mobile device they provided
Location Based Services for set of services which originate from the geographic location. Using these services it is possible for the users to finding and locate other area, vehicles, and resources and also to provide location- services, in addition to tracking their own location. In this paper we will discuss how to implement these location based services in Android after giving introduction to Android and its constituents. A text-to-speech (TTS) system converts normal language text into speech; other systems render symbolic linguistic representations like phonetic transcriptions into speech.[1]
The quality of a speech synthesizer is judged by its similarity to the human voice and by its ability to be understood clearly.
A Text-to-speech synthesizer is an application that converts text into spoken word, by analysing and processing the text using Natural Language Processing (NLP) and then using Digital Signal Processing (DSP) technology to convert this processed text into synthesized speech representation of the text.
Keywords: Natural language processing, text –to- speech, speech synthesis

I.   INTRODUCTION

Speech application can be defined as communication between the user and the computer in more natural way or language. As people find speaking naturally is easy, it is the most advantageous to incorporate speech into any natural language processing software. Conversational dialog is a verbal action and it can takes place turn by turn between human and computer. Proprietary to a specific business. In the latter years software developers have been forced to abandon these languages that are better suited for natural language and option to develop specific dialog flows from scratch using Java, VoiceXML, and now C++. The dialog is designed for the specific application, but it tends to limit the user to specify commands, due to the Feedback and acknowledgement to indicate task-oriented nature of these languages. Although these understanding. The field of Artificial Intelligence (AI) and languages have Object Oriented capabilities they are still the idea of a machine learning with humans are as old as very Much task oriented. The field of Computer Science. A text-to-speech system (or "engine") is composed of two parts a front-end and a back-end. The front-end has two major tasks. First, it converts raw text containing symbols like numbers and

abbreviations into the equivalent of written-out words. This process is often called text normalization, pre-processing, or tokenization. The front-end then assigns phonetic transcriptions to each word, and divides and marks the text into prosodic units, like phrases, clauses, and sentences. The process of assigning phonetic transcriptions to words is called text-to-phoneme or grapheme-to-phoneme conversion. Phonetic transcriptions and prosody information together make up the symbolic linguistic representation that is output by the front-end. The back-end— often referred to as the synthesizer—then converts the symbolic linguistic representation into sound. In certain systems, this part includes the computation of the target prosody (pitch contour, phoneme durations) which is then imposed on the output speech.

II.   LITERATURE SURVEY

A.   Turing―Computing Machinery and Intelligence‖, Mind 49, 1950, pp. 433 - 460

This should begin with definitions of the meaning of the terms "machine" and "think." The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous, If the meaning of the words "machine" and "think" are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, "Can machines think?" is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively

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unambiguous words.

B.   Designing Effective Speech Application‖, JavaTM Speech API Programmer's Guide, Sun Microsystems, Inc.
The Java Speech API defines a standard, easy-to-use, cross-platform software interface to state-of-the-art speech technology. Two core speech technologies are supported through the Java Speech API: speech recognition and speech synthesis Speech recognition provides computers with the ability to listen to spoken language and to determine what has been said. In other words, it processes audio input containing speech by converting it to text. Speech synthesis provides the reverse process of producing synthetic speech from text generated by an application, an applet or a user. It is often referred to as text-to-speech technology

C.   J. A. Jocko, A. Sears, ―The human – computer interaction Handbook
Fundamentals, evolving technologies, and emerging‖ New Jersey: Lawrence Erlbaum Associates, 2003, pp. 712-750.
Some areas for future work would be to add more intelligence to grammar to achieve more
Natural and robust dialog responses by using collaborative user communication.

III.   SYSTEM LEVEL DESCRIPTION

A.   Android Application
The android applications that are designed, used on the client's side.i.e., calling, messaging, notification etc

B.   Graphical User Interface
For supervising purpose, a GUI (Graphical User interface) is Developed on which the query is solved.

C.   Working
A simple text process is by natural language processing software with linguistic knowledge and some logical inferences. Then the text goes to make some phonetic Transcription with desired intonation and rhymes. Then it passes through the Digital Signal processing to transform that symbolic information into speech with the help of mathematical models, algorithms and computations. To develop the Application with Natural Language Processing and Text-to-Speech, we have used the Client- Server Architecture approach. As the goal of the application is to provide text-to-speech functionality on mobile device, it uses Android operating system device as client. It can be any model of the phone using Android 2.2 Or above version. On the server side, The Natural Language Parser is developed sin Java. The grammars and dictionaries used for the application are in the .txt format packaged in Language 'directory of the application package. User can connect to the server from the android phone by giving the host name and the port number of the server. User can speak or type the question to the device and then it connects to the server to parse the speech and process it Using natural language processing. The server communicates to the android client and gives The response in text format. Android client is using Text- to-speech library to process the text into speech. Finally user can get the response of the question asked in speech format on android device.
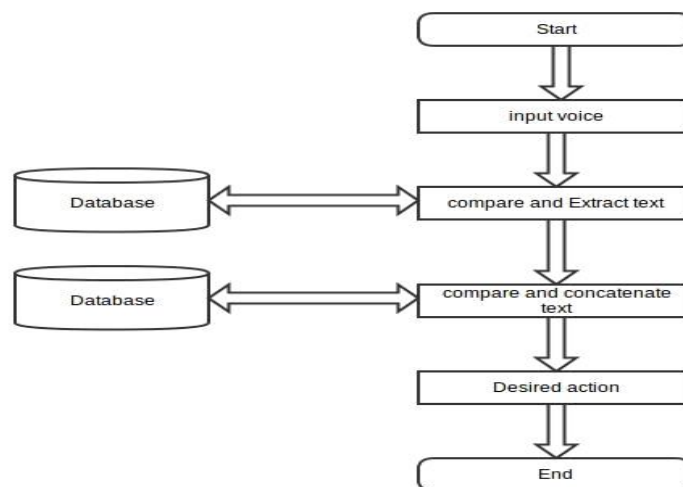

Fig.Flow Diagram

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IV. CONCLUSION

Text to speech synthesis is a rapidly growing aspect of computer technology and is increasingly playing a more important role in the way we interact with the system and interfaces across a variety of platforms. We have identified the various operations and processes involved in text to Speech synthesis. We have also developed a very simple and attractive graphical user interface which allows the user to type in his/her text provided in the text field in the application. This project uses primarily the android device, with text to speech library supported for android operating system.

Second, this application gives the appropriate responses based on the natural language parser and understanding tool to flow the user communication with android smartphone more natural way. In future we can use text to speech as primary method for input in ATM machine, telephony system, video games. The solution implemented during this project is Scalable, portable, can be deployed to any android device.

Location Based Services are those services which provide both information and entertainment and are accessible with mobile deices through the mobile network.

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