



Communication with Reality Data Information Extraction System with Voice Interface

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Abstract: *Interacting with machines with voice as interface is one of the prominent and emerging trends, having voice as interface between man and machine makes the work simpler. Many applications were developed which have voice as the mode of communication. Here we have discussed a novel methodology that provide a suitable way of accessing internet contents by giving voice as input through normal phone calls, here to work with this system, it's just enough for the user to have a normal phone which is sufficient enough to make voice calls. Voice recognition is then made from the input (user's voice from the call) to retrieve the proper contents from the internet, then which it is used by the parser to extract the needed information from the WebPages. The text information extracted is then converted to audio which will be delivered to the user by automated voice system. We have also discussed about our ongoing work for this paper and at last we have set the outlined direction for the future development of this paper, i.e., to improve the voice control over the system.*

Keywords: *parser, voice recognition, speech synthesizer*

I. INTRODUCTION

Voice control over the system is the simpler and faster way of accessing the system, which gains more attraction than by having other interface methods such as keyboards, mouse, etc... User just interact with the system by giving normal voice as command, the system recognize this voice and invoke the necessary module for the output. Various applications were developed based on voice communication in the past Decades and completed successfully, here we provided a general framework which can be extended and referenced for the future development. The purpose of this paper is aimed at developing the system that can be used by wide range of users, In the existing system, user should have thorough knowledge for accessing the web-contents, which makes it inappropriate for some users. Here, we have overcome the basic key necessities needed to use the internet contents.

The system proposed does not need any connection to the internet service provider or any special type of application to run it, it's just enough for the user who know to initiate a call using the normal phones and

have a proper voice communication. Unlike normal web-access, here every access to the web is made

using normal phone calls, no need to wait for the page to get loaded fully. This technique is viable even to the user who doesn't have much knowledge about the internet. Thus it is not necessary for the user to have acute mind to get use of it, also if provided multi-lingual facility in the future enhancement, can make the application to be used in a wide range.

II. EXISTING SYSTEM

Existing system uses normal web browsers or other small applications that provide a interface to the web access, the main drawback of this method is that, it is not possible for every user to access the web. Since because every developer develops their website according to their wish, it will not suit for many users to get used with the system, it requires that the user should have a sound knowledge about working with these applications, thus not possible for everyone. Also user has to go through many websites and should spent much time to locate the exact content needed, to overcome this malady, we have proposed the technique, which just delivers the content in the most suitable way to the user that is in the voice format, here the user need not go through multiple links and spend time in searching, user just gives the voice

query as input and waits for the result, if the result is not satisfied, the user makes another query and re-initialize the request. The major advantage of this technique is, it works with the normal mobile phones and does not require any additional features like 2g, 3g or gprs to work with it.

Many voice based applications were developed for the web-usage, which prompts the user to press a particular key in the mobile phone, based on the key pressed the response is generated and feed back to the user by an automated voice, these applications achieves only a single target like online booking, bill payment, customer care provided by the organization, etc. No general voice based application was developed till now, which enables the user to access all the web contents. In this paper, we have set an evolving path, in which the future developments can be made.

III. PROPOSED TECHNIQUE

In the proposed technique, we have given a general approach that can be implemented to create a system that extracts information from the website, by using a voice as input. Here the call from user is transferred to the fixed GSM/GPRS modem here in the below fig.1.1, overall framework of the paper is given

A. Architecture Diagram:

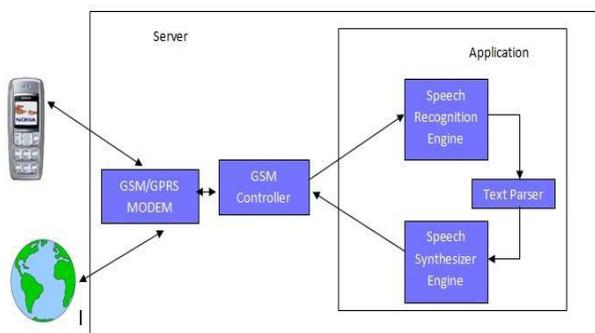


Fig 1.1

B. Parsing

Parsing is the process of analyzing a text, made of a sequence of tokens and comparing it with the pre-defined grammatical structure. Here, parsing plays a vital role, the voice input given by the user is converted into text, which is then parsed, for comparing and retrieving of proper information from the web. The server which receives this information will search for the appropriate content in the web. The content which matches mostly with the input is

retrieved for delivering to the user. Here basically the parsing is done in two ways, as follows

1. Structural parsing
2. Text parsing

1) *Structural parsing*: Structural parsing is done with additional information which describes about content organization in the website. System should have knowledge about structure of the website on which parsing is done. This type of parsing is called as structural parsing.

2) *Text parsing*: Text parsing is carried out without any additional information. It is done by simply extracting all the plain text from the particular url and then required content for the user is obtain from the entire extracted text, this can be implemented with pattern matching concept. The pattern matching can be done with identifying keywords in the query from the extracted text. The following fig.1.2 describes the entire data flow of the paper proposed

C. Data Flow:

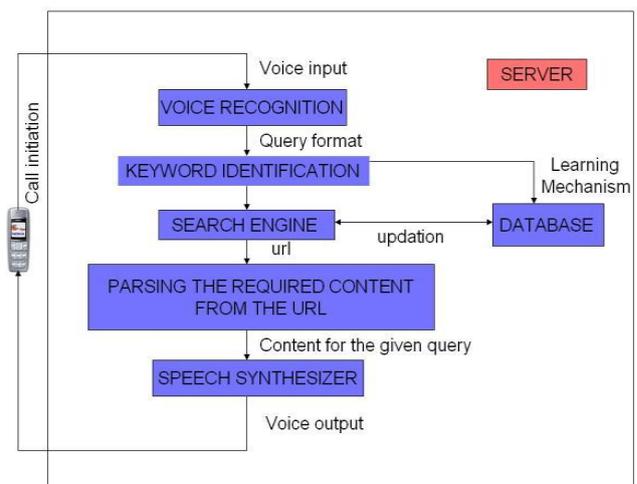


Fig 1.2

The voice from the user is directed to the voice recognizer, which is followed by the keyword identifier, this is where the learning mechanism is implemented, which learns the user input and acts according to it. When the learning is over, then the search engine searches for the appropriate url to extract the content. Extraction is done in the next phase, where any one of the above mentioned parsing is done, the user input is matched with

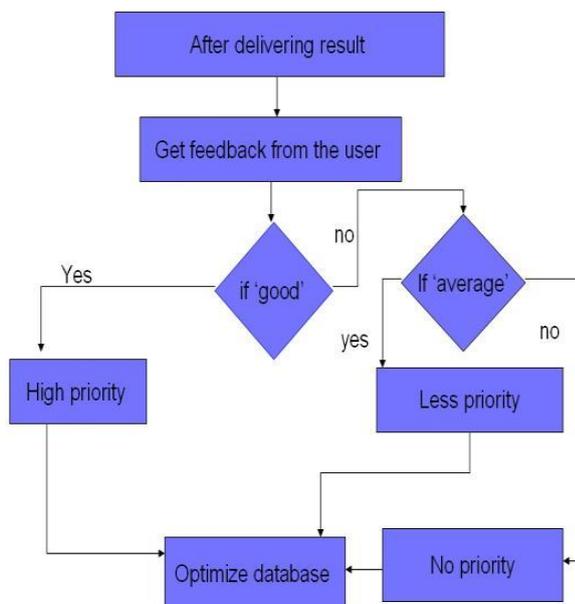
the webpage content for the similarity measurement, the content which matches the most is retrieved and delivered to the speech synthesizer, where the extracted content is converted into voice format, for making the final delivery to the user.

D. Optimizing System through Feedback:

Here the feedback is got from the user, after each output, the user rates the delivered result mentioning how far it helped to find the exact content, from this performance of the system is optimized. Making it better for the future access of the same content. If the user gives the positive feedback, then that is prioritized in the database, for making the next retrieval easier.

Thus after each access, the system gets optimized and works better in the future usage. After every result delivered in a voice format, the user is asked to give the feedback, the user normally achieves it by saying any one the key number as the result, say, if satisfied 'say good', if not satisfied with the result 'say average'. If 'good' is said then the delivered result is marked as high priority else if 'average' is said, then that is marked as the less priority else no priority is given, these updations are made in the database. During the future retrieval, the system tries to find out the feedback generated already in the past. If the result is worthy, then the system goes for the further process, else the system checks the next result. It helps in reducing time and speeds up the system. By not searching the unwanted webpage's, which has given the less priority?

Following Fig.1.3 show the exact feedback process.



III. IMPLEMENTATION

Nowadays, most of the people prefer to locate the information in the easier way, so our system helps to achieve such environment. The various components used in our system includes GSM modem, voice recognition software, parser, text to speech software. GSM modem is connected with the system via rs232 serial port. GSM Modem provides facility to incorporate the SIM within it. Whenever the user calls to the particular number then the call is directed to the modem as like normal mobile phone operation. The separate controller program is written for interfacing with the GSM modem in our application. This controller is responsible for directing the incoming voice signal to the voice recognize engine, the package used designing controller is Java Phone API.

Voice recognition is done with java package called sphinx or with some commercial voice recognition software's like natural dragon speaking, espeak, etc these software's are embedded into the system for recognizing what the user speaks. For parsing the content from the website, we use the Java package Jsoup. This package helps to retrieve the content from URL with DOM Parser technique. After extracting the required information, the next process is to relay the content back to the user in the voice format. for this we use the java package called Free TTS.

IV. FUTURE ENHANCEMENT

Although many useful applications were developed based on voice as input, there are many issues to be worked and should be improved, one of the major issue to be considered for making the system to be used globally is providing multi-lingual facility, there are various factors to be taken care, when multi-lingual option is provided, some of factors that has to be improved are recognizing voice when there is external disturbances, recognizing voice of people who have different slangs of the same language. The main factor that acts as a hurdle in developing these options is lack of tools. There is not much tools for the developers to create a voice based applications. Thus hoping creation of this voice based tools and applications will pay a way to create a smart applications and accessories in the future.

V. CONCLUSION

Here I have emphasized the importance of working with the application with voice as interface and also I have shown the way to optimize the performance of the system by getting feedback. If the user aims to access only the information from the web, instead of doing the operations like downloading, booking then this system suits the best



with that purpose.

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Biography



Dr. S.SARAVANAKUMAR has more than 10 years of teaching and research experience. He did his Postgraduate in ME in Computer Science and Engineering at Bharath engineering college, Anna University Chennai, and Ph.D in Computer Science and Engineering at Bharath University, Chennai. He occupied various positions as Lecturer,

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