Interface For Visually Impaired For Documentation(Ganaka Dhristi)

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Abstract— Learning through the use of web technology or web based learning has become an important media in the education revolution of the 21st century. The Internet particularly, has become an important tool for learners to acquire information and knowledge that encompasses various elements such as text, graphic, numeric, and animation for their learning process. Learners soon learn that the links in the Internet can lead them to various web pages that can lead them to more information that have a link with one another or to other information that has no link at all with the previous information. The visually impaired learners who actually represent a substantial proportion of the world's population living in certain parts of the world have no access at all to this tool nor can it be easily taught to them as they are not able to see the links. So in this project a Local Search engine module is implemented where the user can search for keywords and get the corresponding information about searched keyword. This project hopes to highlight the GANAKA DHRISTI system to enable the visually impaired learners experience the world of the Internet, which comprises of five modules: Automatic Speech Recognition (ASR), Text-to-Speech (TTS), Local Search engine, Braille-to -Text module.

Keywords: Voice recognition, voice recognition system, local search engine, visually impaired learners.

I. INTRODUCTION

The Internet has become an important tool for learners to acquire information and knowledge that encompasses various elements such as text, graphic, numeric, and animation for their learning process. However, the visually impaired learners have no access at all to this tool nor can it be easily taught to them as they are not able to see the links in the web pages. This paper highlights the GANAKA DHRISTI system that has the capability of access to World Wide Web by browsing in the Internet, checking, sending and receiving email, searching in the Internet, and listening to the content of the search only by giving a voice command to the system. In addition, the system is built with a translator that has the functionality to convert html codes to voice to Braille and then to text again.

This system comprises Automatic Speech Recognition (ASR), Text-to- Speech (TTS), Local Search engine, and Translator (Text-to-Braille) module, was originally designed and developed for the visually impaired learners, can be used for other users of specially needs like the elderly, and the physically impaired learners. Initial testing of the system indicates very positive results.

In the last decade internet has introduced itself as the most important media. There are million pages of useful information available for users to obtain specific information in different fields. Users are able to access information on a wide variety of subjects from anywhere, anytime. This has made Internet as the fastest and easiest media to access at this period of time. On the other hand, there is a need to look at new innovative tools to make the Internet a more reliable media for all types of users, particularly, the visually impaired. An effective browser I needed to make the Internet more accessible to visually impaired learners.

II. RELATED WORK

In previous system architecture of a special browser for the visually handicapped people has been described. The browser is currently under construction. The output module, i.e., Text-to-Speech and Text-to-Braille and the voice feedback for keyboard operation is complete. An Automatic Speech Recognition system is currently being trained with the voice commands. Being open source, future developments on the browser by different groups would be easy. The browser is expected to be more user-friendly and effective for the visually handicapped people and hopefully reducing the gap of information availability between the sighted and the visually impaired people [3]. Author's claims that naturalness in synthetic speech is essentially the successful rendering of variability in the final acoustic signal, once author get beyond the obvious factors such as limiting the domain of discourse within which the system is to operate. In SPRUCE author identifies and treat distinctly several sources of variability in human speech, adhering carefully to contemporary speech production theory. time enables us to manipulate what it feel to be an important interplay between the various types of variability[5].

A voice-driven text-to-speech system for the Slovenian language is presented. The prototypes of the system are already in use and are undergoing evaluation tests. Improvements in the sense of more accurate and robust speech recognition, a user friendly system control high quality speech synthesis are planned for the future. Some work on a speech input which incorporates a larger dynamical list of allowed spoken control commands is

Already in progress. Author expecting further suggestions from the blind and visually impaired community, especially on the design of the strategy for the communication with the system and of course remarks on the Slovenian speech synthesis quality. Many measurements and research in the field of micro and macro prosody modeling of Slovenian speech should be done as well as recordings of new diaphone data bases with different speakers [2]. A pattern recognition application, automatic speech recognition (ASR) requires the extraction of useful features from its input signal, speech. To help determine relevance, human speech production and acoustic aspects of speech perception are reviewed, to identify acoustic elements likely to be most important for ASR. Common methods of estimating useful aspects of speech spectral envelopes are reviewed, from the point of view of efficiency and reliability in mismatched conditions. Because many

speech inputs for ASR have noise and channel degradations, ways to improve robustness in speech parameterization are analyzed [7]. A method for converting text into Braille, in the form in which it is stored as in a computer. The system has been designed to be configurable for a wide range of languages and character sets, and uses a predominantly table driven method to achieve this. The algorithm is explained in the context of the conversion of text into Standard English Braille (British), and the tables for this transformation are given. Particular importance has been attached to enabling Braille specialists, who are not experts in computer algorithms, to be able to modify the system for either slight modifications to an existing Braille code translator, or for producing a Braille code translator for a new language [8].

III. PROPOSED WORK

In order to overcome the problems faced by the visually impaired learners, a solution in the form of a specialized voice recognition browser called the GANAKA DHRISTI was designed. The objectives of the research were as follows:

a) Design and develop a local search engine that enables user to search specific keyword through a voice recognition system.
b) Develop translation module that is able to convert text to Braille

The Fig.(1) represents text to Braille module, this is like conversion engine it converts text into Braille script and Lib Braille is an interpreter which maps text to Braille.

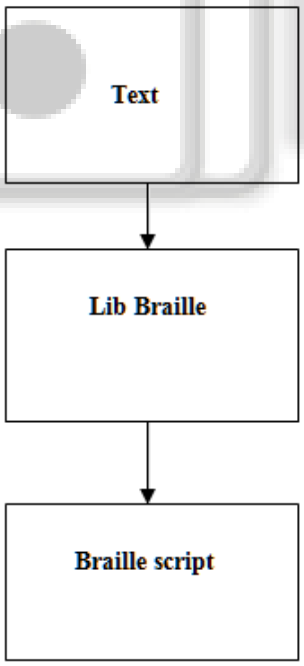

Fig. 1: Text to Braille

Fig. (2) is the local search engine of GANAKA DHRISTI it helps the visually impaired learners to acquire and search for information required for their learning process. the visually impaired user will speak out the keywords into the microphone and the system converts voice keywords into text and search for information regarding the particular keyword after obtaining information the system will gives voice feedback of it, and user can listen to it.

In Fig. (3) Automatic Speech Recognition (ASR) is the base module found in the GANAKA DHIRSTI for the visually impaired learners. The most important factor that needs to be taken into consideration with the ASR is the intersession variability and the variability over time the changes can occur from the user themselves when they are recording their voice in a different place or the noise in the background of the place where the voice of the user is being recorded. The speaker normally is not able to repeat in the same manner with the same intonation at all times. However, it always better when a recoding is conducted straight at one time as compared to when recording is interrupted and continued at a different time.

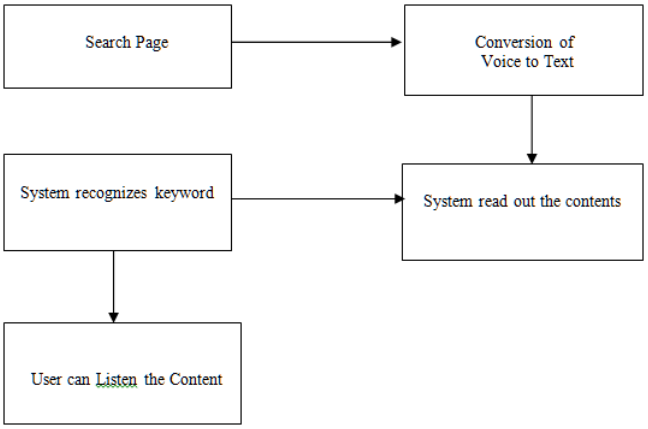

Fig. 2: Local Search Engine

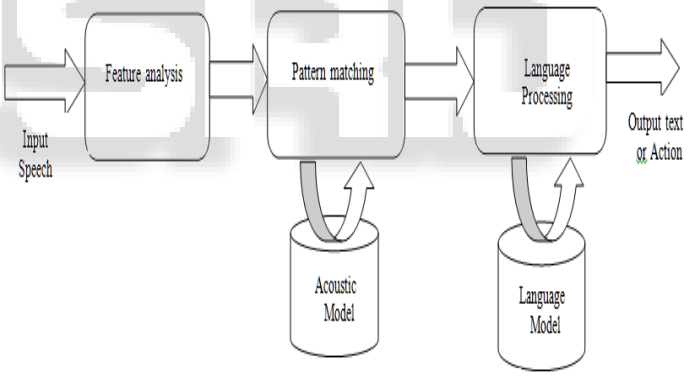

Fig. 3: Automatic Speech Recognition

IV. IMPLEMENTATION

Below are some examples of the codes to build paths for the database to store voice commands

```
//build the path for the db file which
Saves the commands //
string sPath = Application.ExecutablePath;
int pos = sPath.LastIndexOf("\\");
if (pos > -1)
sPath = sPath.Substring(0,pos+1);
sPath += "BackChat.mdb";
while (!File.Exists(sPath))
{
pos = sPath.LastIndexOf("\\",pos-1);
if (pos > -1)
```



```
sPath = sPath.Substring(0,pos+1);
else
{
MessageBox(0,"Data file,
'BackChat.mdb' not in the same folder
tree as .exe file","File not found",0);
Process.GetCurrentProcess().Kill();
}
sPath += "BackChat.mdb";
```

V. CONCLUSION

This system will be an effective in helping visually impaired learners to search information about the specific keywords in Local Search engine. This system has the ability to convert the normal text into Braille script and it can be used for other users of special needs like the elderly, and the physically impaired Learners.

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REFERENCES

[1] Choo W.O, Azlina, "Voice Recognition Browser for the Visually Impaired Learners", IEEE,2008
[2] Salampasis Michail, Kouroupetroglou Christos**,** **"**Adaptive Browsing Shortcuts", 2007.
[3] Ritwika Ghose, Tirthankar Dasgupta, "Architecture of a Web Browser for Visually Handicapped People", IEEE, 2010.
[4] Zan Sun, Amanda Stent, I.V, Ramakrishnan, "Dialog Generation for Voice Browsing", 2006.
[5] Mark Tatham, Eric Lewis, "Improving Text-to-Speech Synthesis",IEEE,2000.
[6] Parwinder pal Singh, Er. Bhupinder singh, "Speech Recognition as Emerging Revolutionary Technology", 2012.
[7] Michael K Brown, NJ Stephen C,Glinski, "Web Page Analysis for Voice Browsin,", IEEE, 2008.
[8] Douglas O'shaughnessy," Interacting With Computers by Voice: Automatic Speech Recognition and Synthesis", 2003.

