NewsReader Application for Blind People Using Text to speech Synthesis

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Abstract - *Newspapers are the source of news and Information and more over it's a window to the outside World unfortunately some of us need others help to gain the knowledge. Multilingual Newspaper Reading System is a system which enables such people to get benefit of newspaper reading without depending others. It's an application which collects, classifies and reads online Newspapers in different languages. The system supports languages like English, Hindi and Marathi. The technologies like speech recognition, speech synthesis and the web are integrated together in the system. The major application of the system will be in the form of an assistive technology for visually or physically challenged, senior citizens and even the illiterate. The application also helps the busy personalities to read the Newspaper, as it provides hands free access to the news sites. The major enhancements are integration of Multilingual Automatic Speech Recognition (ASR), Multilingual Text-to-Speech system with other enhanced features like keyword search facility, Intelligent/ Auto customization in accordance with user and paper independent classified headings. The integration of ASR enables user to operate the system in complete hands free mode.*

*Key Words***: Newspaper Reading System, Automatic Speech Recognition, Text-to-Speech System, Multilingual application**

1. INTRODUCTION

News is packaged information about current events happening somewhere else. In today's scenario, this application brings you the latest news reading experience on the go and keeps you informed on happenings from India and around the World. It also enables visually or physically challenged, senior citizens and even the illiterate people to get benefit of news reading without depending on others. It is an application which collects, classifies and reads online News in different languages like Hindi, Marathi & English. It also helps the busy personalities to read the News, as it provides hands free access to the news sites. The technologies like Text to Speech (TTS), Speech to Text (STT), with other enhanced features like keyword search facility, News recommendation and Category wise news analysis. People also get breaking news, daily news headlines & updates on politics, sports, business, Bollywood & entertainment, technology & automobile.

2. EXISTING SYSTEM

2.1. A STUDY OF MULTILINGUAL SPEECH RECOGNITION:-

This paper describes our work in developing multilingual (Swedish and English) speech recognition systems in the ATIS domain. The acoustic component of the multilingual systems is realized through sharing Gaussian codebooks across Swedish and English allophones. The language model (LM) components are constructed by training a statistical bigram model, with a common back off node, on bilingual texts, and by combining two monolingual LMs into a probabilistic finite state grammar. This system uses a single decoder for Swedish and English sentences, and is capable of recognizing sentences with words from both languages. Preliminary experiments show that sharing acoustic models across the two languages has not resulted in improved performance, while sharing a back off node at the LM component provides flexibility and ease in recognizing bilingual sentences at the expense of a slight increase in word error rate in some cases. As a byproduct, the bilingual decoder also achieves good performance on language identification (LID).

2.2. Multilingual Speech Recognition for Information Retrieval in Indian context:-

This paper analyzes various issues in building a HMM based multilingual speech recognizer for Indian languages. The system is originally designed for Hindi and Tamil languages and adapted to incorporate Indian accented English. Language-specific characteristics in speech recognition

framework are highlighted. The recognizer is embedded in information retrieval applications and hence several issues like handling spontaneous telephony speech in real-time, integrated language identification for interactive response and automatic grapheme to phoneme conversion to handle Out Of Vocabulary words are addressed. Experiments to study relative effectiveness of different algorithms have been performed and the results are investigated.

2.3. Using Speech Recognition for Real-Time Captioning and Lecture Transcription in the Classroom:-

Speech recognition (SR) technologies were evaluated in different classroom environments to assist students to automatically convert oral lectures into text. Two distinct methods of SR-mediated lecture acquisition (SR-mLA), real-time captioning (RTC) and post lecture transcription (PLT), were evaluated in situ life and social sciences lecture courses employing typical classroom equipment. Both methods were compared according to technical feasibility and reliability of classroom implementation, instructors' experiences, word recognition accuracy, and student class performance. RTC provided near-instantaneous display of the instructor's speech for students during class. PLT employed a user-independent SR algorithm to optimally generate multimedia class notes with synchronized lecture transcripts, instructor audio, and class PowerPoint slides for students to access online after class. PLT resulted in greater word recognition accuracy than RTC. During a science course, students were more likely to take optional online quizzes and received higher quiz scores with PLT than when multimedia class notes were unavailable. Overall class grades were also higher when multimedia class notes were available. The potential benefits of SR-mLA for students who have difficulty taking notes accurately and independently were discussed, particularly for nonnative English speakers and students with disabilities. Field-tested best practices for optimizing SR accuracy for both SR-mLA methods were outlined.

3. SYSTEM ARCHITECTURE

3.1 Rich Site Summary

RSS (**Rich Site Summary**; originally **RDF Site Summary**; often called **Really Simple Syndication**) uses a family of standard web feed formats to publish frequently updated information: blog entries, news headlines, audio, and video. An RSS document (called "feed", "web feed" or "channel") includes full or summarized text, and metadata, like publishing date and author's name.

RSS feeds enable publishers to syndicate data automatically. A standard XML file format ensures compatibility with many different machines/programs. RSS feeds also benefit users who want to receive timely updates from favorite websites or to aggregate data from many sites.

Subscribing to a website RSS removes the need for the user to manually check the website for new content. Instead, their browser constantly monitors the site and informs the user of any updates. The browser can also be commanded to automatically download the new data for the user.

3.2 Speech synthesis

Speech synthesis is the artificial production of human speech. A computer system used for this purpose is called a speech computer or speech synthesizer, and can be implemented in software or hardware products. A text-to-speech (TTS) system converts normal language text into speech; other systems render symbolic linguistic representations like phonetic transcriptions into speech.
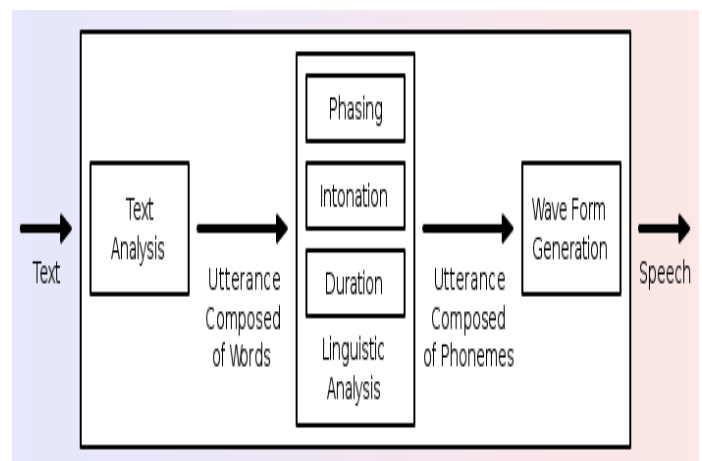

Fig -1: Speech synthesis

3.3 Firebase Cloud

Firebase helps you develop high-quality apps, grow your user base, and earn more money. Each feature works independently, and they work even better Together. Firebase is a cloud services provider and backend as a service company. Firebase's primary product is a real time database which provides an API that allows developers to store and sync data across multiple clients. The company was acquired by Google in October 2014.

3.4 System Architecture

Initially system will fetch RSS news feeds from newspaper websites like TOI, NDTV etc. RSS fetch feeds in XML format. These feeds are then converted into News XML format which is in human readable format. All articles are listed with title, date and short description of article on home page.

Next step is user give voice input to the system which is a keyword for searching articles. According to the keyword list of related article are listed by the system. Again user give voice input to open particular article from listed results.

Also system recommends news to users based on his interest. News analysis is done and pie chart is shown in application.

To read article system will use text to speech synthesis. Also user can save articles. System will read newspapers in regional languages like Hindi and Marathi.
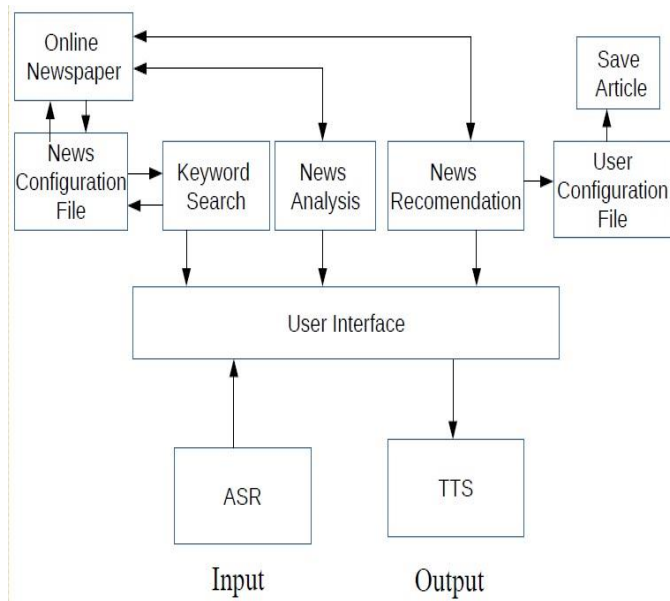

Fig -2: System Architecture

4. CONCLUSIONS

It saves the time in reading the news as well as will help the visually challenged and senior citizens for getting awareness around the world.

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