



Text Summarisation and Voice Conversion using NLTK

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ABSTRACT: In this project we have worked on Text summarization and voice conversion. It is difficult for humans to manually extract the inner meaning of a large documents. Text summarization is the process of identifying the most relevant information in a document or set of related documents and reducing them into a shorter version containing its overall meanings. After summarizing the text, which is converted to voice. Text to voice conversion is a method that scans and reads English alphabets which are in the text using OCR technique and changing it in to voice. We provide a webpage where faculties can upload their notes and students can download it as summarized text and can be convert it into voice. Summarization of text can be done using TEXT RANKING algorithm from Natural Language Tool Kit (NLTK) to summarise the text. NLTK is a powerful Python package, which provides a set of various natural languages algorithms. We also use Tesseract, It is an optical character recognition (OCR) tool for python sponsored by google.

I. INTRODUCTION

Text summarization means, the technique of shortening long pieces of text. The intention is to create a logical and short summary having only the main points outlined in the document. The rapid increase in data transmission over the Internet demands Text Ranking from collections of text. Then this summarised data is converted into voice. Students can grasp the gist of the event more easily by scanning the image or text. From information retrieval to text mining, we are frequently wide open to text summarization. With the coming of the information age and the emergence of multimedia technology, have increased a lot. Intuitively, readers can grasp the gist of the event more easily by summarising the text than by only reading the whole document. While most summarization systems focus on only natural language processing (NLP), the opportunity to jointly optimize the quality of the summary with the aid of automatic speech recognition (ASR) and computer vision (CV) processing systems is widely ignored.

In this work, we present a system that can provide users with textual summaries to help to acquire the gist of large data in a short time without reading documents from beginning to end. The purpose of this work is to unite the NLP, gTTS and NLTK techniques to explore a new framework for mining the rich information contained in multi-modal data to improve the quality of summarization.

II. EXISTING SYSTEM

Currently there are online site for text to sound conversion. It mainly runs on JAVA platform, and the method used was Object Oriented Analysis and Development. This design will be speedup towards providing a one-way communication interface. In the existing system, user can see conversion of text into speech. There were project that focused at reading aids for the blind, talking aid for the vocally disabled and training aids and other commercial applications. Vocally handicapped people can type the text from keyboard and it will be processed by the algorithm and converted to voice. In voice board, they take the Input, so ARM microcontroller will produce the output and is heard through speaker.

In the coreference paper we report preliminary work which explores the use of coreference chains to construct text summaries. Summarization means it mainly contains two steps of process one it creates a copy of the original text and it also create a summary text from the source text and producing an output text summary.



III. PROPOSED SYSTEM

The first step is to join all the text contained in the articles. Then split the text into independent sentences. In the next step, we will find vector representation for all sentences. Similarities in sentence vectors are then obtained and saved in a matrix. The similarity matrix is then plotted as a graph, with sentences as vertices and similarity scores as edges, for sentence rank calculation. Finally, the top ranked sentences form the text summary.

IV. ARCHITECTURE

The architecture of the proposed system is relatively simple. It is basically a web page focusing for students, where this can be implemented in the college students portal, their teachers can upload the notes and the students can retrieve in the form of summarized notes and it will convert into voice also.

This project focuses on mainly three modules: Text Acquisition, Text Summarization, and Voice conversion. The module Text Acquisition focuses on the data which is retrieved as in the form of URL and this URL is passed to the summarization module. On the second module summarization of text happens, the process goes in the form like dividing the text into different paragraphs and selecting each paragraph and eliminating the stop words of that selected paragraph, after that the current paragraphs will be tokenized and a frequency will be allotted and it will arrange in the increasing order of the frequency rate and that forms a summarized text, and this summarized text is converted to voice using gTTS.

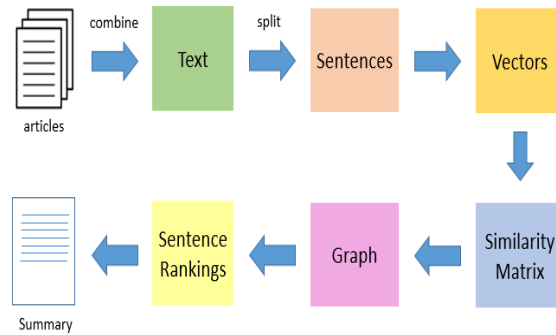


Fig 1

V. WORK FLOW DIAGRAM

The final system can consist of a login page where three types of users can enter. Mainly there is a staff or teacher login where they can login using their registered username and password. They upload notes and other study materials. The second type of users are students who login using their username and password where they can download notes and summarize it or can be converted to voice in mainly 3 languages. The final user is the admin, who controls the whole system. The core part of the system is text summarization. The summarization is done using text ranking algorithm.

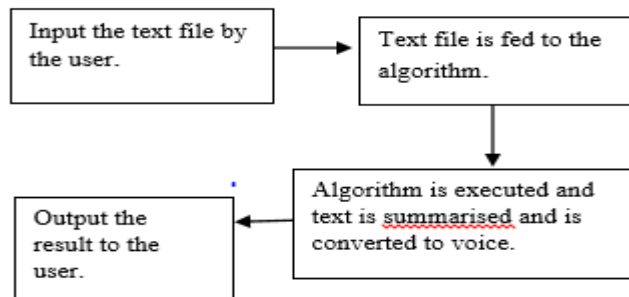


Fig 2



A. USECASE DIAGRAM

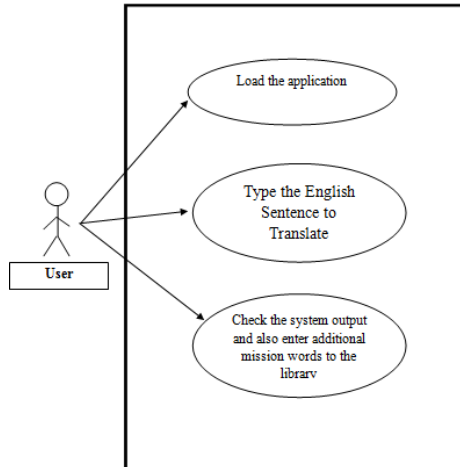


Fig 3

Here the user or the teacher upload the notes and the students can use these notes for their education purpose. The notes are uploaded as pdf files or other files. These notes are summarized and can be converted into voice. The conversion of the note depends on the preferred language of the user.

V. MODULES

A. ACQUISITION OF DATA

One important step in the data acquisition process is the conversion of signals received from sensing instruments to digital representations that can be processed by the computer. Here in this project data is retrieved in the form of pdf and it is given to the summarization module.

B. TEXT SUMMARIZATION

To summarize a piece of writing is to present the main points in a meaningful shortest form. Work on automated text summarization began over 40 years ago. The growth of the Internet revitalize this work in recent years, and summarization systems are started to be applied in areas such as healthcare and digital libraries. A true summary clearly expresses the essence of a document, revealing the essence of its content. This paper explains the use of text summarization within data mining for finding interesting and unpredicted information. It describes the current state in summarization systems and current perspective to the evaluation of summarizers. The paper then suggest a new method for text summarization and a new form of assessment.

C. TEXT TO VOICE CONVERSION

This software project assist the user to read the text file. The web robot reads a text file in its temporary database. After that the bot reads the word to the user. The basic word and their pronunciations are fed to the bot. The remaining words

are complex one and read later. The project can be effectively used to read the text file for the students or the users so that the user does not continuously need to look at the screen and read the entire text. Text to voice converter is a latest software project that helps visually disabled to read and understand the meaning of the text.



VI. RESULT

Here in this project we expect the project to be as useful to the students, here the students can access the notes through this webpage and they can retrieve it as a summarized notes which helps them to capture and recognize easily and this summarized text can be converted to voice and it will provide the students a classroom effect and they can listen the notes repeatedly and via they can reduce the strain.

Sample output:

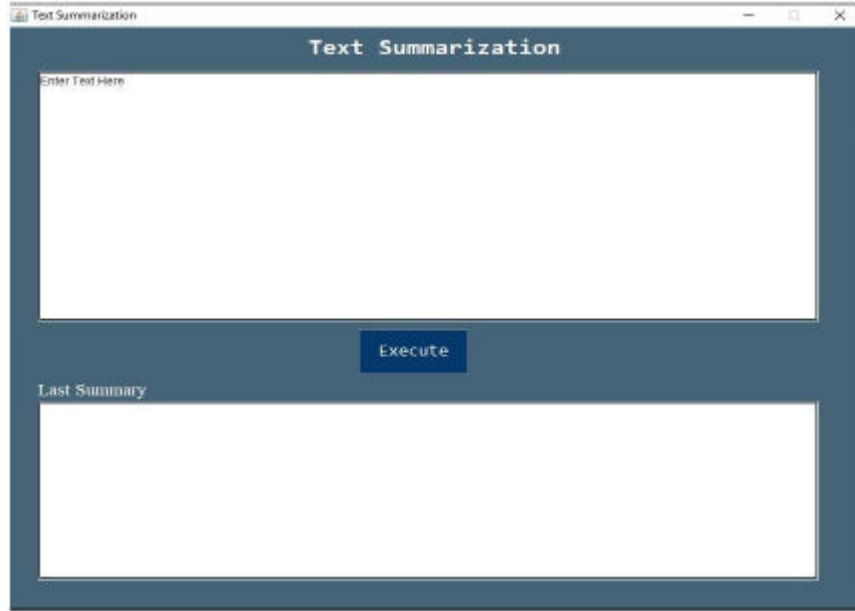


Fig 4

Input:



Fig 5



Output

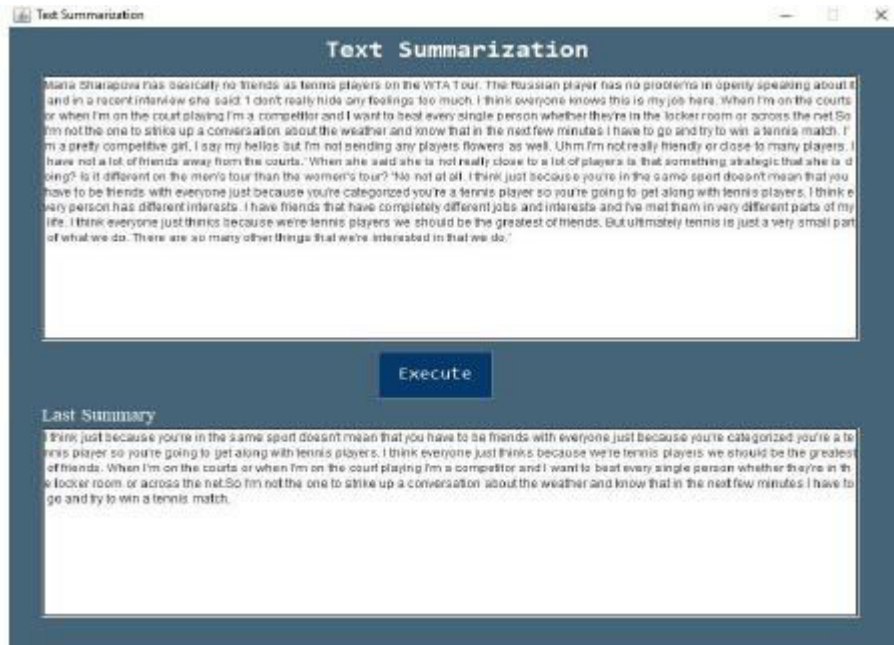


Fig 6

VII. ADVANTAGES AND DISADVANTAGES

Advantages

- The system is helpful for persons having learning difficulties or vision problems.
- Prevents strain for eyes, and user can sit as in classroom and listen.
- Saves time especially while driving, exercising.
- Easy to use.
- Help improving spelling, reading, writing skills.

Disadvantages

- Not natural sounding.
- Cannot read symbols.

VIII. CONCLUSION

This project addresses how to use related text and image information to generate a textual summary. A large file is summarised. The summarised file is displayed as text. The text is converted to voice using algorithms. Text -to-Speech device can change the text image input into sound with a performance that is high enough.

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