International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 04 | April - 2023 Impact Factor: 8.176 ISSN: 2582-3930

ENGLISH TO HINDI MACHINE TRANSLATION SYSTEM

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Abstract - This project implements a translation system that supports multiple input and output formats. The system can translate text from English to Hindi language as well as convert spoken words to text using voice recognition technology. It also includes Optical Character Recognition (OCR) functionality to extract text from images. In addition, the system supports sharing of translated text via Gmail, enabling easy communication across language barriers. The project utilizes several APIs and libraries to achieve its functionality, including Google Cloud Translation API, Google Cloud Speech-to-Text API, Google Cloud Vision API, and pytesseract ocr library. Overall, this system provides a comprehensive solution for language translation and with support for multiple input and output formats, making it a versatile tool for a wide rangeof use cases.

Keywords—Speech Recognition, OCR technology, LanguageTranslator, image extraction, text to speech

1. INTRODUCTION

The ability to communicate effectively in multiple languages is becoming increasingly important in today's globalized world. To bridge the language gap, various tools and technologies have been developed to aid in translation tasks. In this research project, we have developed a system that supports text-to-text, voice-to-text, OCR, video to text, imageto text and Gmail sharing features for translation. Thesystem is designed to provide a seamless experience for users who need to translate text from English language to Hindi language. With the text-to-text feature, users can input text in English language and receive a translated version in Hindi language or vice-versa. The voice-to-text feature allows users to speak in one language, and the system transcribes thespeech into text in another language. Similarly video captioning and image captioning features are there toprovide translation of captions. Video captioning basically means capturing the subtitles in the video and translating them via translation systems. Image captioning will be taken place via two steps. Firstly capture image live through camera and then translating the text present inside it through translation system. So overall the system consists of several modules tied up together making them working in pipeline fashion to provide multipurpose translation services.

Thus, the motivation behind this system is to gathered all the features of translation services at one place to make it convenient for users to get their work done without surfing to various systems for various purposes.

2. LITERATURE REVIEW

The importance of translation in our globalized world cannot be overstated. With more and more people interacting across linguistic and cultural boundaries, the need for effective translation tools has become increasingly important. In recent years, advances in technology have made it possible to developmore sophisticated and versatile translation software, including the type of multipurpose language translator that is the focus ofthis project.

One key area of research in translation technology has been the development of machine learning algorithms that can improve the accuracy and speed of translation. In particular, neural machine translation (NMT) has emerged as a powerful tool for improving the quality of translations. NMT models use deep learning techniques to learn how to translate text from one language to another, and they have been shown to outperform traditional statistical machine translation models in many cases.

Another area of research has focused on the use of multimedia translation, which involves translating not only text but also audio, video, and images. This is particularly important in today's world where people consume content in a variety of formats. One recent study found that using audio-visual translation techniques (such as subtitling or dubbing) can improve the comprehension and recall of information presented in multimedia formats. Finally, there has been research on the use of translation technology to address specific challenges, such as the languagebarriers faced by people with disabilities. Another area of research has focused on the use of multimedia translation, which involves translating not only text but also audio, video, and images. This is particularly important in today's world where people consume content in a variety of formats. One recent study found that using audio-visual translation techniques (such as subtitling or dubbing) can improve the comprehension and recall of information presented in multimedia formats. Finally, there has been research on the use of translation technology to address specific challenges, such as the language barriers faced by people with disabilities.

Some researchers have developed sign language translation systems that use computer vision and machine learning techniques to interpret sign language and translate it into written or spoken language.

Overall, the literature suggests that there is a strong need for versatile and accurate translation tools that can support a range of different formats and languages. This project's aim to develop a multipurpose language translator with features like text, video, speech, image, etc. will address this need, and help eliminate language barriers for people around the world.

2. PROPOSED SYSTEM

The aim of the proposed system is to develop a system that has capability to perform Translation, Converting text to speech, Speech Recognition, Text Extraction. Thesystem proposed here will be developed for a smalldomain of English words.

3. METHODOLOGY

For our system, it has 5 modules that is text to text, image toText, video to text, speech to text, live ocr, etc. they are integrated are with each other.

1. Text to text

We implemented text to text translation using the googletrans library in Python. The library was initialized, and the desired text was passed to the translator. The text was translated into the desired language using Google's translation engine, and the resulting translated text was returned.

Fig.1 Block diagram of Text to Textconversion

2. Speech to Text

We implemented speech to text translation using the Speech Recognition and Google trans libraries in Python. The recognizer and translator were initialized, and audio was recorded from the microphone. The recorded audio was transcribed using Google's speech recognition engine, and the resulting text was translatedinto the desired language using the Google trans library.

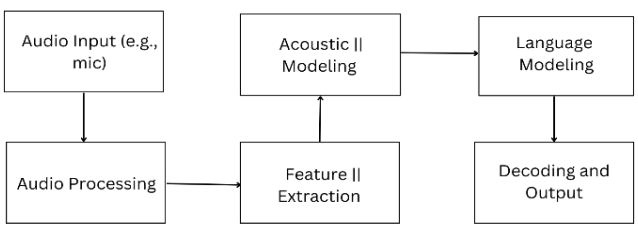

Fig.2 Block diagram of Speech to Text conversion

3. Image to Text

We implemented image to text translation using the easyocr module in Python. The module was initialized, and the image containing the desired text was loaded. The loaded image was passed to the ocr function of easyocr,which extracted the text from the image. The resulting text was returned, providing an accurate and efficient method for translating text from images.

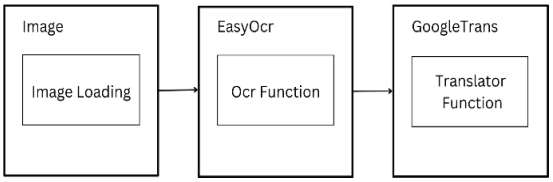

Fig.3 Block diagram of Image to Text conversion

4. Video to Text

The video is loaded using moviepy module, and the audio is extracted from it. The audio is converted to a wav file, which is then split into smaller chunks. Each chunk of audiois translated to text using googletrans. The translated text issaved to a file or printed to the console.

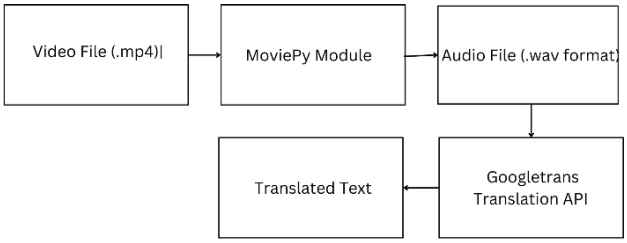

Fig.4 Block diagram of Image to Text conversion

5. FUTURE WORK

Here we implement this on webserver so, in future we can implementthis system for mobile phone. So users can more efficiently usethis system by one click of mobile instead of surfing again andagain on web portal. Also we will try to add multiple languages. We can also add grammer correction software. Spell checking and grammer correction can be incorporated which will include a spell checking and grammer correction tool that could improve the accuracy and clarity of the content generated by our system.

6. CONCLUSION

In this proposed system, we implemented the system for user who phasing problems of language barrier and also it user interface is also user friendly so that user can easily interact with this system .so because of this systemdon't have to use dictionary for understanding the meaning of word, so it automatically reduce the user task for understanding the languages for communication.

ACKNOWLEDGEMENTS

As the outset we offer our sincere thanks to our honorable guide Dr. Pankaj Zope for guidance and also encouraging us with his knowledge and experience for the development process of the project. We also value his eagerness and enthusiasm in encouraging us to develop our technical and creative ideas, which ultimately led to success of our project. Our special thanks to faculty members of Computer Engineering Department for their great support and kind co-operation to provide us with whatever we require for our project.

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