

## A SMART LANGUAGE TRANSLATION TECHNIQUE USING OCR

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**Abstract** - In a Traditional way of Translation it becomes difficult because users need to maintain different manual books for understanding different languages and users as to learn every single word from the manual to understand a particular meaning of a sentence or words from a certain language, or else a person needs to get help to understand the language. As Translation technology consistently improves, Language Translation using OCR (Optical Character Recognition) is an application for recognizing and extracting the text through a camera, and extracted text language can be identified and translated into any language. These features are included in Firebase ML Kit (Machine Learning) and Google Play Services packages for adding ML concepts to an application which were provided by Google for Android Development. The main purpose of Language Translation by using OCR (Optical Character Recognition) with Android is to bring down the Language barrier by enabling people to translate any text content from one language to another language, by simply taking a picture of the text they want to translate.

particular part of the text. In this Application, OCR uses a combination of the text detection model and text recognition model as an OCR pipeline to recognize text characters. In the OCR system, the recognition will interpret the scanned images and turn images of printed characters into Machine-readable characters. the process of OCR pipeline to recognize characters.

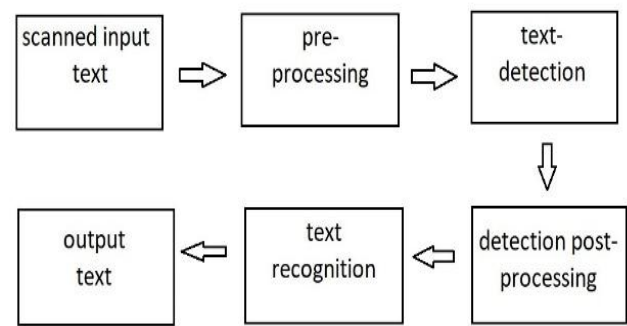


Fig 1 : Translator using OCR process

**Key Words:** OCR, Android Application, FireBase ML Kit, Translation API

### 1.INTRODUCTION

Our Idea of language translation will be more useful, especially in the translation of the scanned text such as images where the text is present in the image and might be different from manual translational which. might be practically impossible. OCR refers to software technology and is also referred to as text recognition to create a digital version of a scanned image or handwritten image to transform characters such as letters, numbers, and punctuations used by an application to read without the need for manually typed or text. Generally, OCR with TensorFlow Lite is a Fire Base ML Software Development kit that provides advanced capabilities of machine learning to Android. OCR is a process of recognizing text from a camera or image to translate information from the source language to the target language.

Language Translation using OCR will provide the flexibility to scan the text Images of different languages like English, French, Hindi, and Spanish and provides the Customised translation of that scanned text or image to the user based upon the requirement of limiting the translation to a

An image is passed from a number of stages like Image pre-processing, text detection, detection post- processing, and text recognition to perform the OCR pipeline. Images of the OCR system might be acquired by scanning images or by capturing a photograph of the Image. The aim of image Pre-processing is to improve the quality of the image captured by a camera necessary to modify the raw data. Text detection is the process to detect text and extract text from an image by of blocks, lines, words, and characters from the image. The text detection stage uses the features extracted in the scanned image. detection post-processing involves recognizing and localizing Text detection stage uses the features extracted in the scanned image. recognition process which will recognize images in a Latin script. Text recognition is the part of the OCR that finally recognizes individual characters from images and outputs them into Latin script.

### LITERATURE SURVEY

1)A Detailed study and recent research on OCR by Devaraj Verma C and Proddutur Shruthi. This paper says an overview of OCR and discussed various phases like image acquisition, noise removal, normalization, pre-processing, and feature extraction and also discussed the Generation of OCR, the history of OCR, and applications of OCR.

2) Overview of various OCR techniques by Aksha Srivastava, Nitin Ramesh, and K. Deeba have discussed various OCR techniques which comprises the various phases of recognition such as pre-processing and post-processing acquired for camera images. the paper says about the field of Optical Character Recognition, there are various challenges that still exist such as recognition of characters in various languages, real-time recognition, etc. Finally, the use of OCR in real-world applications remains an active area of research.

3) A mobile application OCR Assisted Translator by Nikhil chigali, Sai Rohith, M Suvarna ani. K and Rajeswari S. say to select the image, extract the text, and then translate the text has been designed and developed for further enhancement to address the problem of translating pdf and other documents to be translated from one language to another language by using a flutter pdf viewer. OCR Assistant Translator proposed the user flexibility to upload the documents or images and provides customized translation based on the requirement. The documents can be in varying formats like doc, pdf, or jpg.

4) Text Recognition using image processing and Translation by A.K Gaikwad and Mayur Pabalkar. They proposed to recognize characters with the use of optical character technique with an accuracy of exceeding 90% mark to robust different kinds of text including color, font style, size, and background. The system is easily portable and scalability.

5)Scanner & Decoder: Conversion of Text from any Application Form and its Language Translation Using OCR by Sharmila Sengupta, Anshal prasad, Harish Kumar, Ninad Rane, and Nilay tamane, with CNN (Convolutional neural networks) for text detection and recognition of handwritten Hindi characters from printed forms and then translated into English. They also proposed sentiment analysis using NLP (Natural language processing) for analysis, extracting, and analyzing information towards public reaction, sentiment analysis is performed by using Random Forest Algorithm, and NLTK (Natural Language Tool Kit) libraries are used for giving an accuracy of 88%. Feature extraction is also part of the process. The system must be trained on object information.

6) Review on Handwritten Character recognition by Nikita Mehta and Jyotika Doshi. This paper discussed categories of OCR and various approaches to achieve a good recognition rate for Indian scripts, but only for individual characters with different modifiers which are quite complex to identify the Devanagari script.

**PROPOSED SYSTEM**

While traveling becomes a major problem faced by travelers for understanding unfamiliar languages and failing to understand unknown languages which lead to challenges of exact text or major problems of manual translation. As Human translators cannot complete the speed of Google

Translate API, to overcome this problem Language Translation using OCR (Optical Character Recognition) is an Android application for recognizing and extracting the text through a camera and extracted text language can be translated into user-specified language. The Application defines the text recognition, identification, and translation part in one single activity screen. we are using a module Dependencies called Camera X for OCR to capture, recognize and extract the text from the camera. In a typical scenario, the user has to scan a text area with the cell phone camera used by OCR, it has 2 stages

1)text-detection model

2)text-recognition model

first, the text-detection model is used to detect scanned text in the image around bounding boxes. second in a text-recognition model, we processed bounding boxes to recognize the specific characters from the text. once, the text is detected the recognizer will determine the actual text in each block and portion it into lines and words.

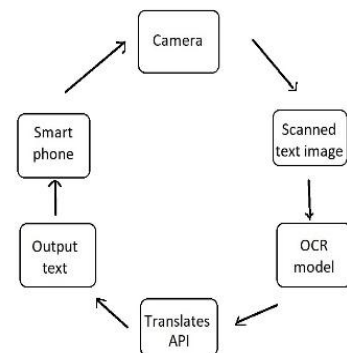


Fig 2 : working of application

Text Recognition API -Text recognition API includes detectors used to represent the structure or find text in images by detecting words, lines, and paragraphs. Recognition API will detect text in Latin-based languages like French, German, English, etc. in real-time, on the device once the scanned image is recognized by an OCR.

Translation API- we have integrated an open source Translation API with our OCR Application for the translation of an extracted text into more than one hundred languages. Translation API offers fast and dynamic results almost the same as instant. As Translation is faster and free and you need to have a good internet connection to access this application. by using this application we can translate into multiple languages. the whole proposed system is implemented in the android application and the Purpose of this project is to implement text extraction from the image and translate it into the user-specified language.

## RESULTS

The main activity and Home screen of the application.

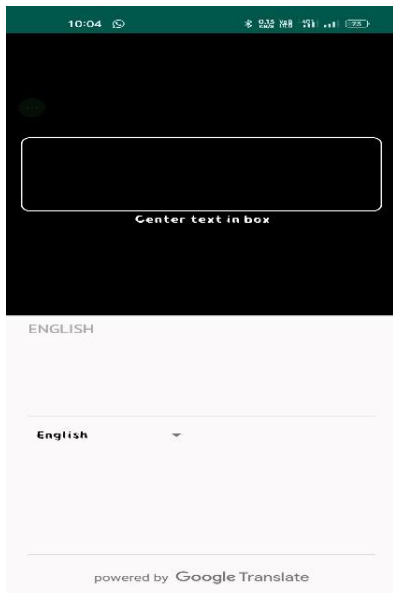


Fig 3: Main Activity

In the Main activity, the text will Capture with camera at the Center text in the box portion.

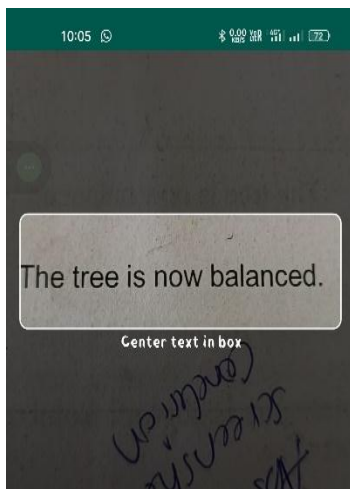


Fig 4: Captured Text

Once the text is captured, the user will have to choose a language from a list of languages to translate captured text.

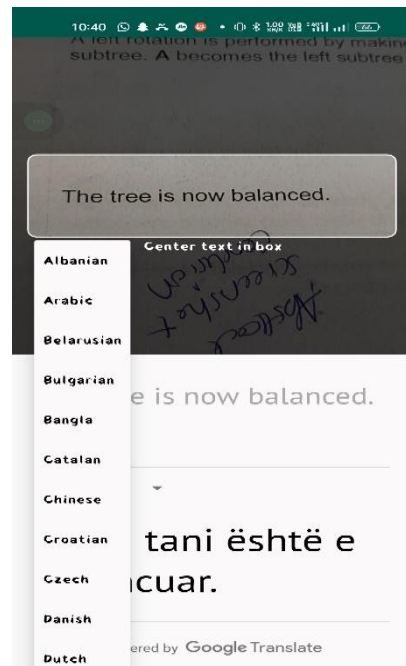


Fig 5: list of languages

the output of captured text will be translated into user-specified language.

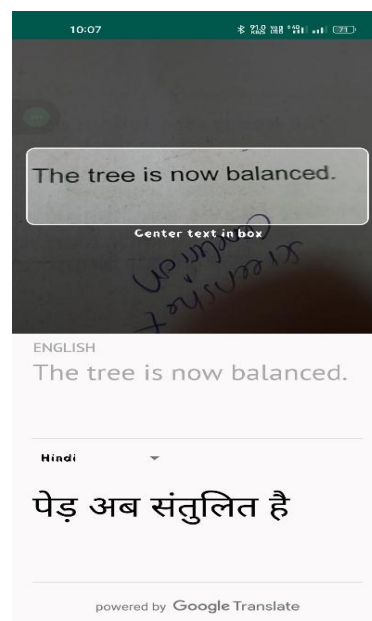


Fig 6: The output of translation in (English to Hindi) language.

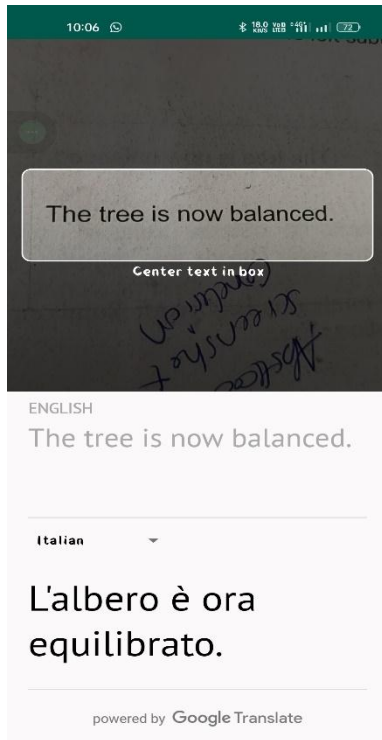


Fig 7: The output of translation in (English to Italian) language.

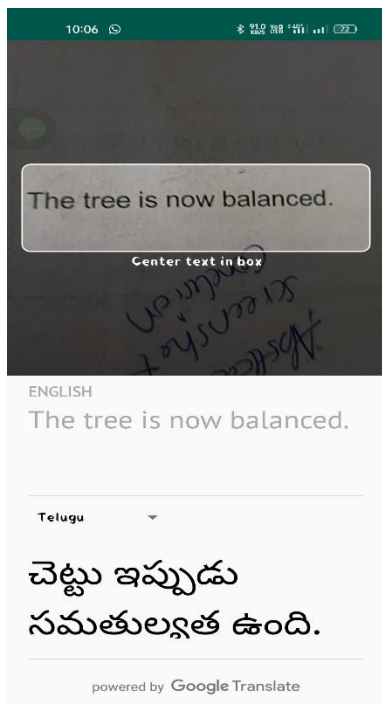


Fig 8: The output of translation in (English to Telugu) language.

## CONCLUSION

This is the discussion about the optical character recognition technology used to recognize the text from the camera and then translate the text into the user-specified language without the need for manually typed text which may prove resultant for people as they overcome the issues of a language barrier. As language interpretation will be easier and enable the user to get faster access for translation of a scanned text into multiple languages with an accuracy of 90% mark. The main advantage of the system is scalability and reduction of cost. By using this application users will be able to communicate with local people for a better understanding of unfamiliar language.

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