Efficient OCR For Modilipi Using Machine Learning

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Abstract- *Modi is an ancient language from Maharashtra India which is discovered in 1200 -c. Balaji Avaji the secretary of Chhatrapati Shivaji Maharaj Bhosale, is the creator of the modi language. After that in 17th century the modi-lipi was developed modi-lipi is then being used in Maharashtra as primarily language until 19 th century then it is replaced by the Balbodhstyle of the Devnagari.*

Character recognition is simple for humans, but it is quite complex to build a software that can recognize characters. The sample data set (training images) of the characters is maintained by taking different images. These images are used to provide training to the system. The obtained results prove the effectiveness of the proposed recognition technique

Optical character recognition for modi-lipi is an efficient way to read or understand the modi-lipi. modi-lipi is very difficult to understand and learn. we need a specialized person that can read and translate the modi-lipi into Marathi and there are very few humans left that's why an software will work as a translator.

Keywords- Character Recognition, OCR, MODI script, modi-lipi, Devnagari

I. INTRODUCTION

Optical character recognition (OCR) is the mechanical or electronic conversion of images of typed, handwritten or printed text into machine-generated text. Character recognition is one of the oldest fields of research since the advent of computers. Till now OCR has been developed for several languages like English, Devnagari (Hindi), Bangla etc. But not much work has been done for Modi script. The language is a medium of communication between two individuals and it has two forms that are oral andwritten.

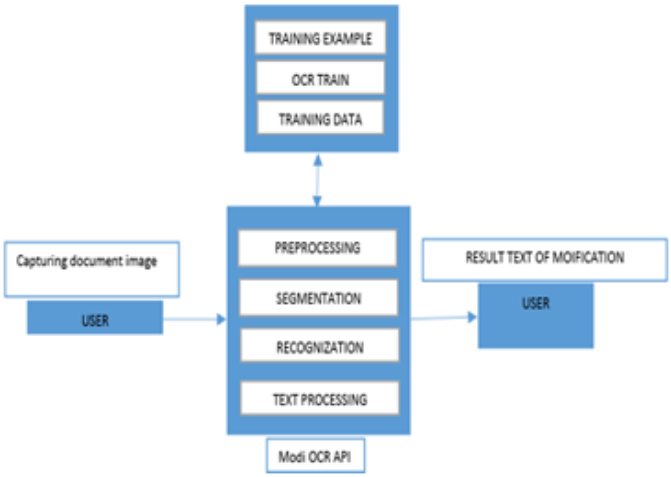

Fig.1 Architecture Diagram

Nowadays the whole world is shift into digital world. Translating old aged documents into the new aged language is impossible if any human translator is not available. They want everything in digital form, they not ready for manual work or any manual hand written transaction. Also, they want to avoid the handwritten data. To overcome such issue we implement this system. The Objective of the project is to convert handwritten Modi language character images to text using image processing and machine learning techniques

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Problem Identification: Making An Application that Recognizes the MODI-LIPI and Translate into Marathi. Made a fully working android application that can detect MODI-LIPI from the Document and Translate intoMarathi.

User of the System: AnyUser

Capture Image: In this stage, user can input the image for text recognition. The user can capture the image of any hand written document through their android phone.

Image Preprocessing: Without preprocessing we cant get 100 accuracy, so we have to do preprocess on images and then send for further process of recognition. Preprocessing involves con- verting the frame into other format (grayscale, binaries image and soon).

Apply Otsu's Thresholding Techniques: Noise represents unwanted information which deteriorates image quality. Noise

can degrade the images at the time of capturing or transmission of the image. For apply- ing image processing tools to an image, noise removal from images is done at highest priority. We are going to use Otsus algorithm to perform thresholding on the gray scale image.

Character Segmentation: Segment characters from image like 1. Definition is the heading text we have to detect using image processing then we have to capture image and segment all character from given image and then send input to CNN for Number and Character recognition. In this step we are doing one-by-one character segmentation and create segmented character images.

Character Recognition:

a. Number Recognition: 0-9 numbers are recognized using following images.
b. Character Recognition: Following characters are recognized in the ModiLipi detection.

This kind of dataset will used for recognize character segmented from images.

Modules ofProject:

- **Preprocessing:** this is first stage of the project where every noise and impurity of the image is removed from the imageitself.
- **Segmentation:** this is the second stage where the image is divided into separate predefined segments that are the used to recognize thetext.
- **Feature Extraction:** this is the third stage where the features like text and not text areas, pattern of the text from the segmentation and all the calculation part is done.
- **Classification & Reorganization :** this is the fourth part of the project where the classification of the recognized text is done from which it is easy to access and recognize the new input characters
- **Post processing :** this is the last stage of the project where the image segments or the pattern that is found or recognized as an text from the modi-lipi is saved into the system form the next learning phase or the next phase of new input to the system

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II. CONCLUSION

The recognition, segmentation and classification of MODI script is a difficult task because the MODI handwritten characters are naturally both cursive and unconstrained. similarly, high similarity between character and distorted and broken characters. Hence extreme variation is observed in the collected samples. An optical character recognition works in several stages such as scanning, preprocessing, feature extraction, classification and post-processing. MODI script is kept away due to its cursive and complex type nature and available only in old document and on stone in a carving form. The main advantage of our approach is that the features are invariants under translation, scale, rotation and reflection. It overcomes the problem in varieties in handwriting. Sometime the handwritten character are tilt, small or large in shape. The project is to convert handwritten Modi language character images to text using image processing and machine learning techniques.

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