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Online Conversion of Tamil Language into Tactile for Visual Impaired People

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Abstract--- *To access the materials for visually impaired people there are various technologies available. One of the most popular material is the Braille book. To obtain knowledge with the Braille book the tactile dot technology is used by the blind people. The project's goal is to structure and build up a Braille System and develop the output for the visually impaired people that empower them to collaborate and convey. This examination proposes an algorithm which empowers the user to change over the content that we ordinarily have in our everyday utilization into a Braille Script and subsequently encourage the visually disabled.*

Keywords--- *Blind, Tactile, Tamil Character, Social Network.*

I. INTRODUCTION

Visually impaired people are those who does not have a good capacity to view things as a person with normal vision view. In order to survive in this competitive society, the visually impaired people should develop their skills in all the possible areas. They should be more and more efficient in education.

To access the materials for visually impaired people there are various technologies available. One of the most popular material is the Braille book. To obtain knowledge with the Braille book the tactile dot technology is used by the blind people. The first Braille system was developed by Louis Braille For the visually impaired people.

A method must be made, with user-friendly interface, for the fast and effective transformation of printed Tamil books to Braille books for the utilization of people with visual incapacity. The examined duplicate of the text book is passed onto the Tamil OCR incorporated at the backend of the apparatus by and subsequently the perceived Tamil content is assembled in a similar understanding request. The output is expected to be the Braille content of the scanned copy which has been fed into the system.

The Braille encoding framework speaks to literary archives in a decipherable organization for the outwardly tested people. As there is a deficiency of Braille good understanding materials, outwardly tested individuals face inconvenience in necessities like instruction what's more, business. Perusing content records is hard for outwardly tested individuals in different conditions. Outwardly debilitated people can peruse just by utilization of Braille content. The dominant part of printed works does exclude braille or discourse renditions. There is a need of a framework for programmed acknowledgment of content archives to braille and discourse to decrease correspondence hole between the composed content frameworks utilized by located people and access systems through which outwardly weakened individuals can impart.

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Tamil is a language with a long and antiquated artistic convention, first Indian language to be pronounced an old style language by the Legislature of India in 2004. Tamil is a Dravidian language spoken for the most part in southern India and Sri Lanka, and furthermore in Malaysia, the UK, South Africa, Canada, the USA, Singapore, France, Mauritius, and numerous different nations. The Tamil content has 12 vowels 18 consonants and one extraordinary character, the ayudha ezhuthu. The total content, along these lines,

comprises of the 31 letters in their free structure and an extra 216 combinate letters, for an aggregate of 247 blends of a consonant and a vowel, a quiet consonant, or then again a vowel alone. The compound letters are framed by including a vowel marker to the consonant.

Vowels in Fig 1 are called the 'uyir ezhuthukal' in tamil. Combined with the consonants (Fig 2) that is the 'mei ezhuthukal' These consonents are categorised into three types such as vallinam which is the hard consonants, mellinam which is the soft consonants, and idayinam which is the medium consonants.

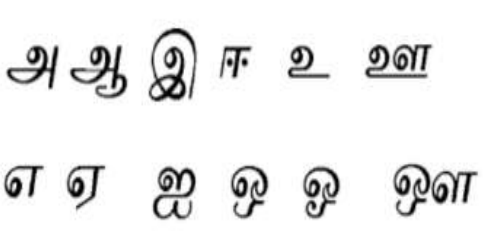

Fig. 1: Tamil Vowels

Fig 2: Tamil consonants

II. RELATED WORKS

This paper where Gayathri Devi proposed about a system [1] shows an exploration work for changing over the Tamil vowel and consonants content present on printed content picture to editable content and furthermore change perceived content into Braille content. The experimentation of the calculations was done on the Tamil content picture dataset and results show that the anticipated technique has a decent exhibition. The work changes over just Vowel and Consonant arrangement of Tamil language to Braille content and this work can be additionally evolved to perceive Tamil compound letter sets present in a picture and convert it to proportionate Braille framework. S. Padmavathi et.al proposes a method [2] For changing over the Braille report to content, the information is taken in two distinct arrangements. In the

first strategy the Braille character is acknowledged as an arrangement of numbers composed through the keypad also, in the second technique a filtered Braille report is taken as information. The Braille character is taken for each situation and coordinated with the relating letters in order with assistance of a pre manufactured Tri structure. G.Sathyanarayanan discusses that [3] This paper extends a model to help outwardly disabled or daze individual in perusing the content present on southern Indian Language content picture by changing over the content into relating Braille content. The test has been carried out on the south Indian language text present in the image which is taken as a dataset. The outcome of the test shows that this method gives a better performance, that is the text present in an image is converted into the corresponding Braille script. Capt.Dr.S Santhosh Baboo et.al says that [4] This paper is on Methodology of a camera based assistive gadget that can be utilized by individuals to peruse Braille record. The

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structure is on executing picture catching strategy in an inserted framework dependent on Raspberry Pi board. Managing pictures in term of picture preparing issue it's anything but a simple assignment. Versatile Thresholding strategy that has been utilized to isolate the Braille spots from the foundation is a compelling method and it gives an excellent outcome for over 90% from the pictures. Morphology procedures can assist with upgrading the picture from a commotion. Capt.Dr.S Santhosh Baboo et.al [5] took a survey on the Braille script and Tamil Braille where he says The Bharati Braille programming has adopted a phonetic strategy to speaking to Indian Language message thus it is very simple to change over the content arranged utilizing the multilingual proofreader into Braille codes. Only a straightforward table look into methodology is all that one would require and the program will change over content in the vernacular into fitting Braille codes for use with an embosser associated with a PC. Bharati Braille doles out the cells to the essential hints of the Indian dialects in a way where vowels and consonants that find direct reciprocals in English are given a similar portrayal as in English. Along these lines, with negligible exertion one would ready to peruse both English content and Indian language content. This course of action is basic if the outwardly incapacitated are required to speak with their partners in different nations [6].

III. PROPOSED METHODOLOGY

The following research proposes the conversion of Tamil words given in a text book to Braille content. It includes the following methods such as Image acquisition, Pre-processing, Segmentation, Feature extraction and Optical character recognition.

The Input is taken as the scanned copy of a Tamil book. The scanned copy is then let into the system and each character in the word is recognised by the optical character recognition

I) Image Acquisition

The image acquisition process is said to be the beginning of the method. It is securing the picture from the versatile or camera. Even though numerous techniques are accessible to recover a picture, cell phones are generally utilized wherever to filter After getting a picture the got picture is said to experience the pre-processing activities. In order to scan a book we can use a scanner and fetch the input image for further processing

II) Pre-processing

Pre-processing is method of performing some of the operations on the image at its lowest level by bringing out the input and output intensity of the images. It is performed to reduce the level of noise in the image. Using preprocessing the image can be converted into gray scale or binary to perform better operations on the image.

III) Segmentation

It is an operation used to decompose an image of continuous characters into sub images of individual characters. It can also be said to partition an image into parts or region. In order to find the region, present in an image is to look at the discontinuities present in the pixel values, which can be its edges. These edges define the regions. Whereas the other methods divide the image into region based on its color or textures.

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IV) Feature extraction

Every character has a specific feature, which assumes a hectic task. These characters have a enormous specific characters. The feature extraction process is used to define the important shape of the data contained in an image by a formal technique. The feature extraction technique organizes the feature which can be used to distinguish each character in the available section. This part is said to be the heart of the framework in proceeding the system.

V) Optical character recognition

Optical character recognition (OCR) is a process in which the images are changed electrically by means of manually written or printed words into a machine encoded language. It is used for the purpose of data entry from a printed paper of records. Various research fields such as Computer vision, Artificial intelligence, Pattern recognition use the OCR method. The advanced OCR methods are capable of recognizing the characters in greater degree of accuracy. In this concept most of the systems are capable of producing a formatted report as good as the original copy of the image. It is a strategy used to provide a digitized message in a printed format.

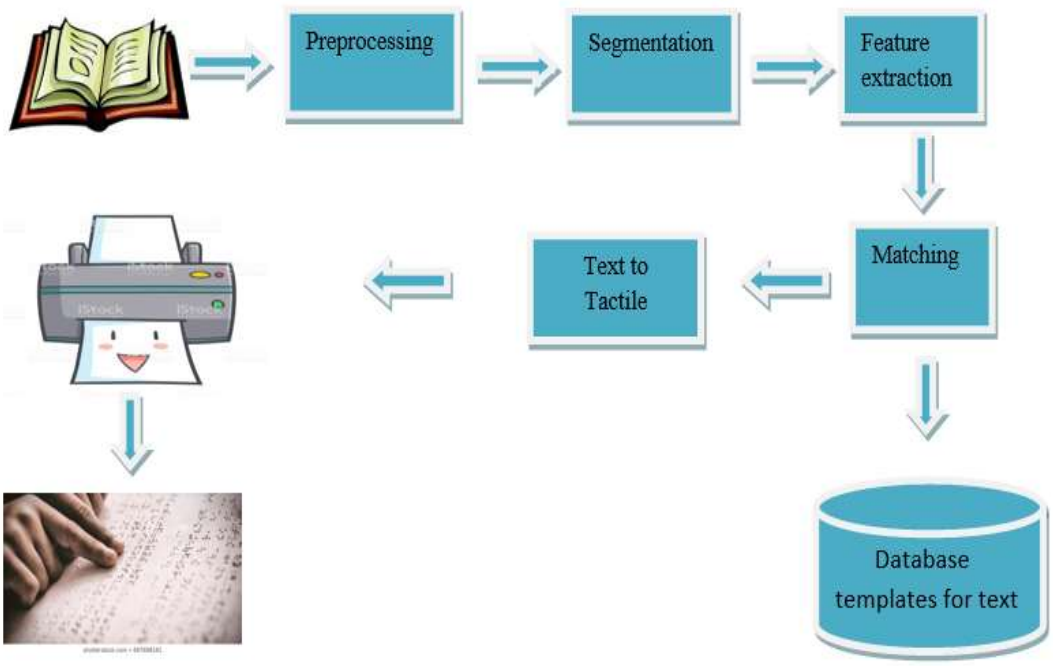

Fig. 3: System Architecture

The proposed investigate follows the system which is given in the figure, The figure depicts about a Tamil book where the filtered duplicate of the book is taken as an info and experiences pre-processing. At that point the division procedure fragments every one of the words into characters. Where the component extraction happens for the divided characters later the database and used to coordinate the content with the accessible layouts and the Braille archives are printed.

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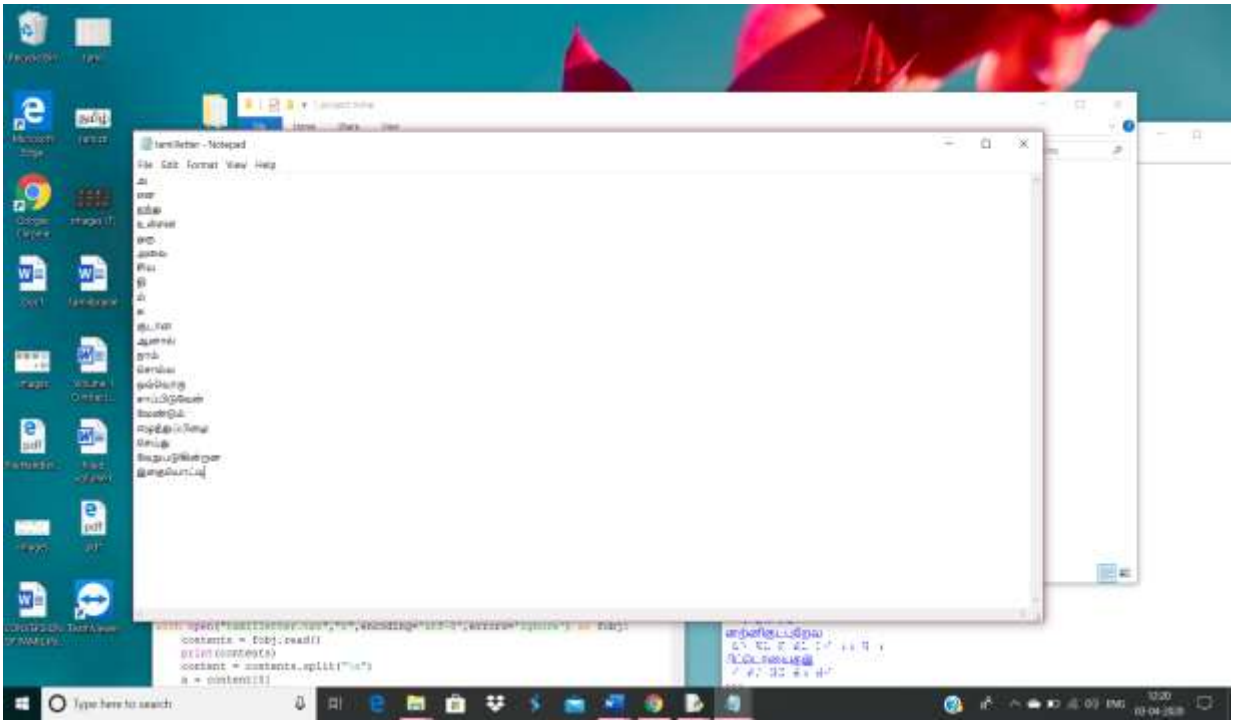

Fig. 4: Tamil Input

The Fig 4 represents the words which are gathered from an image are stored in a separate file for further use where these words are used as input for the conversion of Tamil words into Braille. Later after checking the equality of the stored words and the Braille character the output is displayed in the separate file.

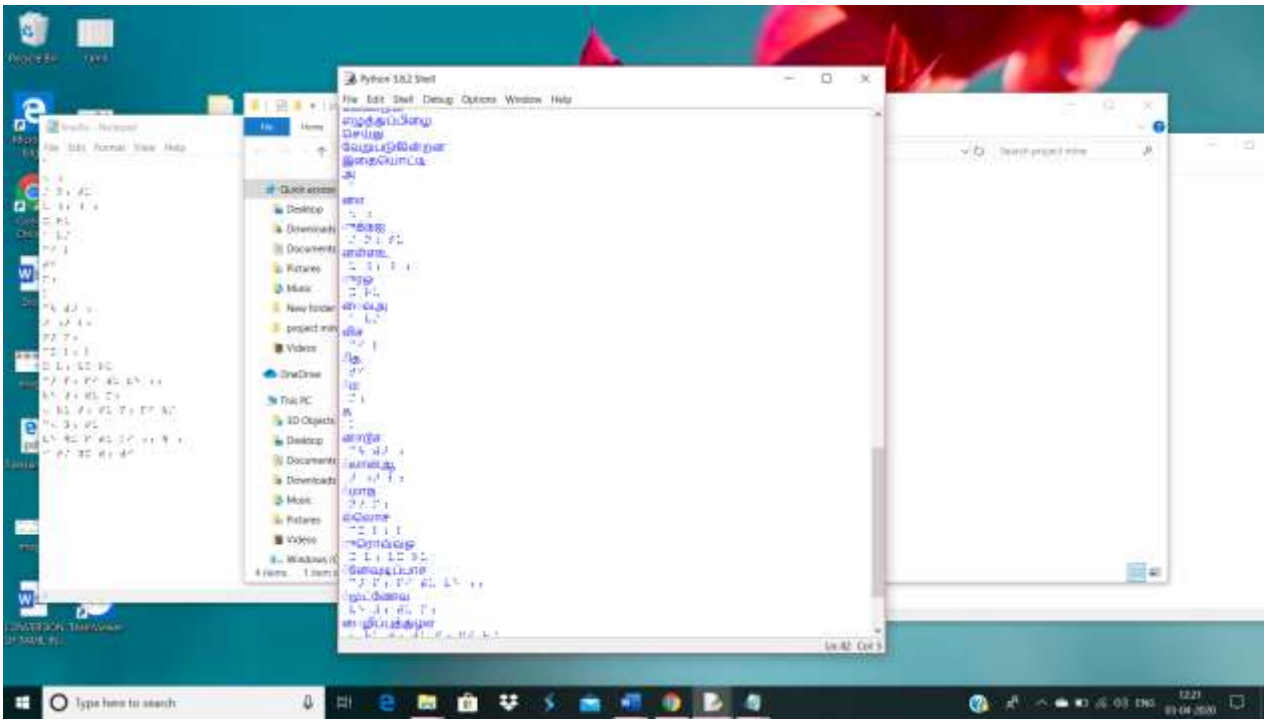

Fig. 5: Braille output

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The Fig 5 represents the Braille characters of the above-mentioned Tamil words which are taken as input. As are method being very simple and easy to use, we can collect a large number of Tamil data to convert it into Braille by this method.

IV. Result And Discussion

The proposed methodology converts the Tamil words present in the text book into the equivalent Braille content. Since the availability of the Braille documents are very less in this system, we can produce a greater number of copies with this easy and efficient process. Scanned copy of the Tamil books is converted into Braille easily and which also is very efficient and saves time due to its fast process. Later the converted Braille documents can be embossed by the Braille embosser.

The screenshot given below represents the Tamil words which is converted into the Braille content. This method provides an easy and efficient way to convert the Tamil words. As there are so many tools used to convert the English letters, very a smaller number of tools are used to convert the Tamil words and books. Many tools are used at present but those are used only to convert the vowels and consonants, which remains as a drawback. We overcome this limitation by producing the conversion of Tamil words i.e., the combination of vowels and consonants into braille documents.

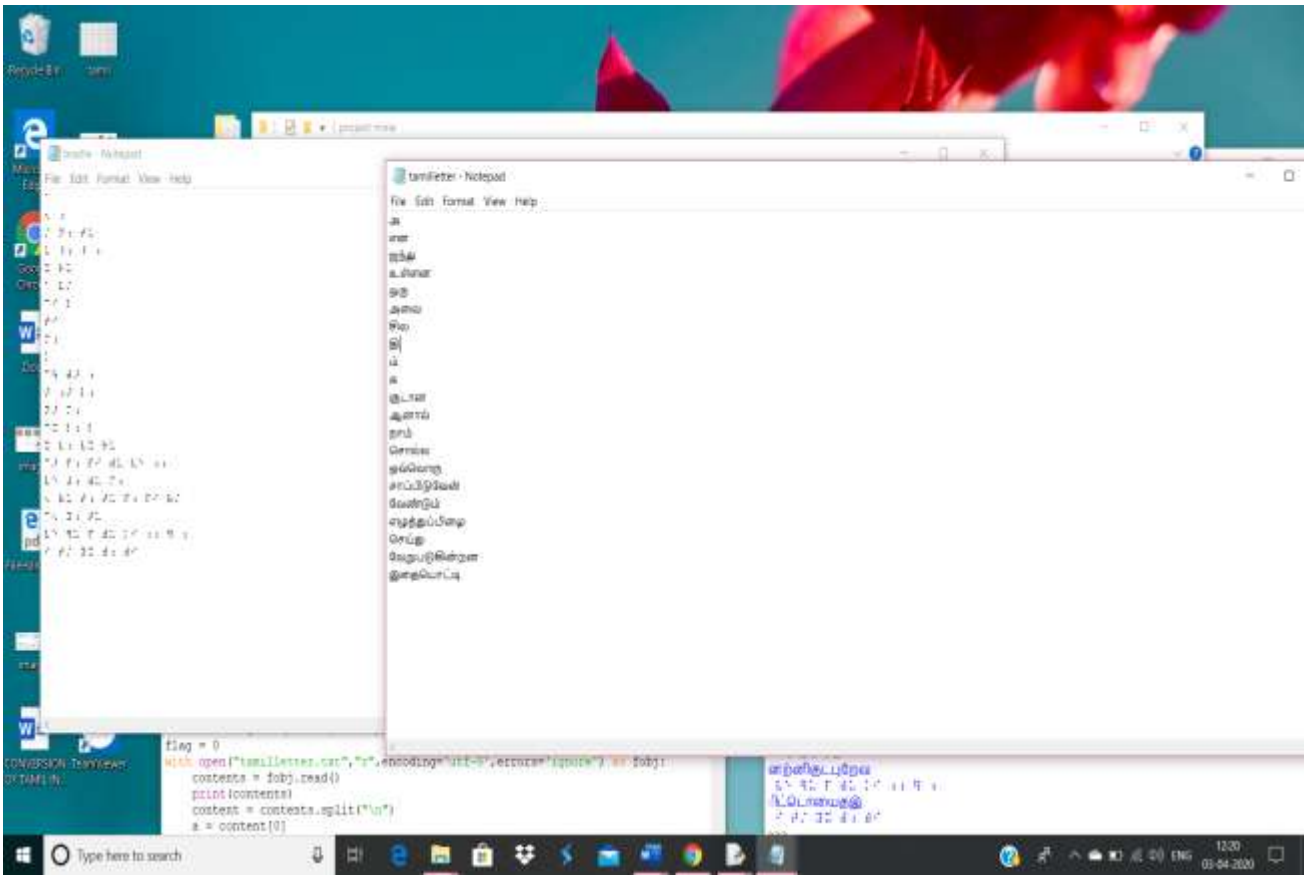

Fig. 6: Tamil words and corresponding Braille output

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V. CONCLUSION AND FUTURE ENHANCEMENT

This method provides the best way to convert the Tamil words given in a text book to braille. Which can be more useful for the people who are visually impaired. This helps them in enhancing their educational level. People whose mother tongue is Tamil and other people who loves to read Tamil book can use this method to get a better result. This method can be further enhanced to minimize the memory usage. And develop more accurate way than this. People who opt this methodology will be able to easily access this in order to get the better result. This proposed approach presents a calculation to help outwardly debilitated individual in perusing the Tamil content present on printed content picture. Test results appear that the proposed technique has a decent exhibition on changing over content areas in a picture into Braille Script. The investigate work changes over arrangement of Tamil language to braille content.

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