

Braille language converter for visually impaired people

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ABSTRACT:

The Braille language is the system of language in which it can be used by visually impaired people for both reading as well as writing. This paper proposes only how the device going to help the visually impaired people for reading the printed English books. The Braille cells consist of six dots and all of them are segmented in structure. The text is first detected and it maps with an equivalent Braille letter and the converted letter is raised from the holes in the Braille pad so that the visually impaired people can easily understand. The Braille system has different representation of letter for different language. Each mapping of text is differs from language to language.

Keywords: Braille system, Braille pad, segmented cells

INTRODUCTION:

The visually impaired people are present as an integral part of the society. They have less access to the computer and internet than the normal people. Braille system was invented by Frenchman Louis Braille in 1821 which enable the visually impaired people to read and write through touch. In nineteenth century, it becomes developed. It consists of six dotted cells with this, the Braille characters are coded with alphabets.

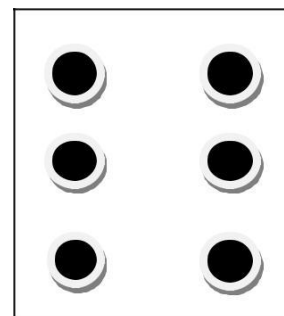


Figure 1: Braille cell

In the form of dotted embossed on paper is known as Braille pad, not only in the paper it is available in material also. It has the configuration of two columns with maximum three dots as 3x2 matrix. The six dots might or might not be raised; giving sixty four potential characters. In English it includes twenty six English alphabets, punctuations, numbers , etc. English to Braille conversion increases the demand on Braille code which is integrated education for blind people. It is based on the image processing method. The study has both manually printed written Braille as well as computer printed Braille. The dots in the Braille cells should have sharp edges and well defined. During scanning process it is observed that every alphabet is detected and corresponding output can be found in the Braille pad in the device.

PROPOSED SYSTEM:

In the existing system, the text in the book or papers are scanned and then it is converted into speech. In this text to speech conversion, there is some disadvantages. There is a problem in pronouncing the certain word in English and the rate of voice is fast so that the blind people could not recognize the full sentence correctly.

In the proposed system, the English characters are converted to the form of raised buttons in the Braille pad. The

system will function as the steps given below:

1. Read the input characters from the text file stored in SD card or it will scan the book and store the soft copy of the document in the personal computer.
2. Separate the words on the basis of blank space.
3. Break the word into single character.
4. Access the Braille database and compare the output of the scanned copy and using that output the Braille character can be raised in the Braille pad.
5. Finally, if the blind people touches the Braille pad, they can easily recognize the characters.

SURVEY RESULT:

Around 161 million people live with visual impairment, of whom there are thirty seven million are blind. Approximately 90% of them live in developing countries. Nine out of ten blind children does not have any access to the education so this Braille language converter will definitely helps to the blind people.

This paper is concerned about the transliteration of English text to the Braille characters (It is the dotted pattern used by the blind people for reading and writing). Also the Braille language is also used for the military purpose in the

early days, for coding and decoding (The code words are written in the Braille and the soldiers who can study that language can solve to know the secret things) the secrets of army.

BRaille REPRESENTATION FOR ALPHABETS:

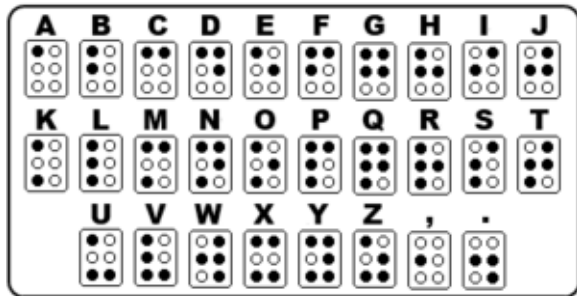
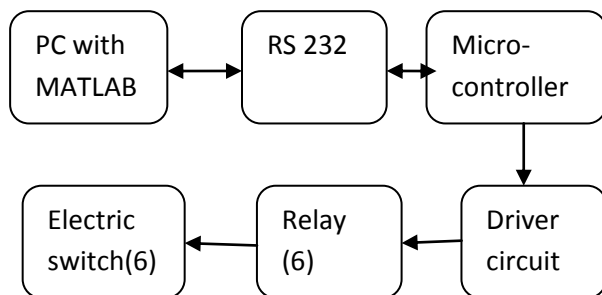


Figure 2: Braille alphabets

In this project, for sensing every alphabet the corresponding buttons in the Braille pad will operate and raised.

IMPLEMENTATION:



1. The PC with MATLAB software is used to perform multiple operation. Here it is used to recognize the scanned character with the English alphabet.
2. The RS232 act as an intermediate between the PC and micro-controller.

3. Micro-controller gives the signals to the driver circuit depend upon the corresponding Braille code.
4. Driver circuits are commonly used to amplify signals from microcontrollers in order to control the power switches.
5. This relay uses the electromagnet for operating the switches.
6. The solenoid coils are used for raising the Braille code in the Braille pad in the devices.
7. Using the electromagnetic effect the solenoid coil will operate and raise corresponding buttons

In this paper, the initiative has been taken to decrease the complications of visually impaired person about the reading of English electronic text with comfortable cost and effective output.



Most part of Braille documents are written with two kinds of points. One kind is like “mountain” and another one is as little “valley”. Thus the finger of the blind person who read the text only detect the protrusion,

while depression are points written to be read from the other side of the sheet.

CONCLUSION AND FUTURE SCOPE:

Our research is focused mainly on the developing a system that reduces the difficulty in reading a document and introducing a cognitive system which can give the visually impaired people a sense of haptic feeling. This system cost effective and the satisfaction of the user is tremendous. However, this can be the ultimate solution for the blind people for an effective interaction with books. In this paper, proposed system and existing system is compared and analyzed. We have find out some solution for the weakness in the existing system with added new ideas.

In future, we hope that this device may exist with wireless technology and in a compact size for the better usage. We assure that this device will helps to bridge the gap between normal people and blind people.

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