

Text to Braille Converter with Audio Output for Visually Impaired Person

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Abstract - A system of touch reading and writing for the blind that uses raised dots to represent the alphabet's letters is called braille, and it is an essential tool for communication. It is composed of six impressions, each of which stands for a different alphabetic letter. It also includes matching combinations of representations for punctuation marks. The standard method for reading braille is to move your fingers over each line from left to right in order to use your sense of touch. Compared to sign language, braille is far more difficult to learn since there are numerous combinations of the six raised dot impressions that can be made. Braille text to audio output Communication between those parties is facilitated by the conversion mechanism. who are blind but do not know how to read braille, and those who do. This device uses a software platform that translates text input into audio and Braille characters. The programming language used in the platform is Python, which translates text input into braille code.

Key Words: Braille code, Text to speech conversion, visually impaired, python software

1. INTRODUCTION

Communication in humans is multimodal. Humans communicate with each other using a variety of methods, such as text, visuals, body language, mime, sign language, spoken speaking, gestures, music, and facial emotions. Blind individuals have very limited or no access to visual communication options. Consequently, in order to present information that was initially meant to be viewed in a visual mode into other modes, technological help is needed. [2][3] For the average person who can read and write in a common language, reading is an easy undertaking. But still. They must read books using specialized books that are coded in braille. Regretfully, it is hard to find those books in a typical bookstore. [4][5] Therefore, in order for a blind person to read a text message, it must be translated into Braille. The braille coding for grades one and two was utilized in this application. In Braille Grade 2, a cell represents a word's abbreviation, whereas in Grade 1, there are 26 standards related to the alphabet and punctuation. Since this is the most widely used braille grade, the combinations of these two grades are the best. [6] Authors and publishers interested in translating text into braille code are the target audience for this application. Technology needs to be adapted for their facilitation in order to involve these people into community life. A fixed matrix known as a cell holds six or eight different dot combinations in the system of braille. There are 256 combinations in eight-dot Braille and 61 combinations in six-dot Braille depending on whether dot is cleared or set. An orthogonal grid's intersections should be where all of the dots on a Braille page fall. The

diameter of a typical dot is 1.8 mm. This research offers a solution to that issue, simplifying the learning process for the blind. Since not all textbooks are available in audio or Braille writing, creating this method would help with the issue. We will take a picture of the textbook material and turn it into a Braille script.

2. PROBLEM STATEMENT

For an average person who can read and write in a common language, reading is a straightforward undertaking. However, blind people have many challenges while trying to read, write, and pursue an education. Because Braille code books are expensive and hard to come by, a translator is required to translate material into Braille so that a blind person can read and understand it. It is necessary to have an automated device that is based on software because human translators may not always be available. The greatest tool for teaching blind children braille and helping blind people read braille. This approach will be a very useful tool for literacy in braille.

3. METHODOLOGY

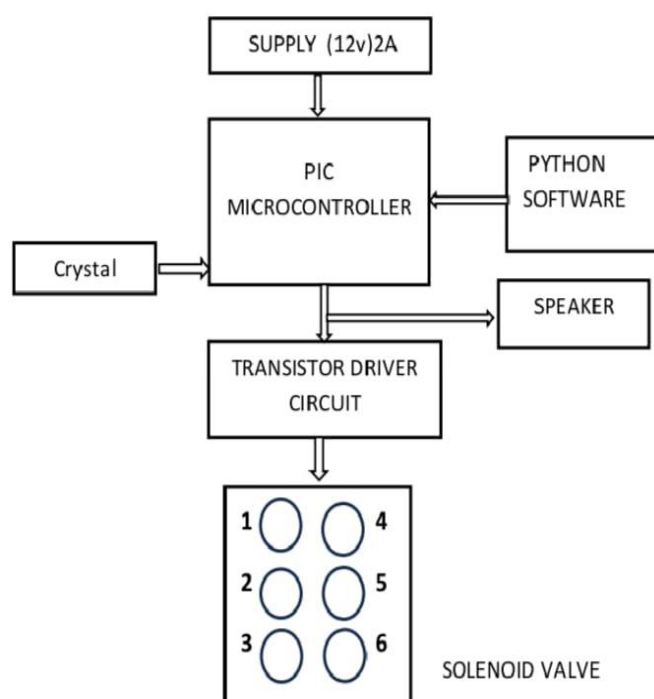


Fig1 : Block diagram

Software Implementation: The Python programming language is being used to create an application that will transform standard text input to Braille script. Once software get the user input like alphabets and numeric values to it corresponding Braille Format Which will be passed on to the PIC. then Filter design for speech conversion In this part we will convert the input text into a speech

Hardware Implementation: The following step deals with communicating with a PIC microcontroller. The PIC microcontroller is being connected to other parts through a circuit that is being constructed. The output of the program is transmitted directly to the PIC once it has been switched on and connected to the software. The desired output is then produced by appropriately converting the input and feeding it through a solenoid valve. The design of a filter to convert speech is also being pursued. This section begins with converting the input text into speech, which is then delivered via a speaker. This allows blind individuals to hear the input text and verify what they have read in Braille. Additionally, the design of a speech-converting filter is being worked on. The input text is first transformed into speech in this portion and is subsequently spoken by a speaker. This makes it possible for blind people to hear the input text and check their readings of Braille. connect the solenoid valve in a proper alignment with the transistor so that the solenoid valve will get triggered according to input

4. LITERATURE REVIEW

"Converting Text to Braille System" It was discovered by Rhea Prabhav et al. [5] in this study created a device translator or converter that reads alphabets from a keypad or keyboard and, using servo motors with metallic rods that rotate at specific angles when a specific alphabet is fed into the conversion system, converts the letters one at a time into braille.

Hemanth, et al., A V [6] Arduino and Solenoid Valve-Based Text to Braille Converter. This paper describes how to use Arduino to actuate solenoid-based valves and translate English text into six-digit braille coding. People with vision impairments can learn braille using this six-digit code However, this technique only converts braille code up to grade 1.

Parteek Bhatia and Manzeet Singh [7] "Automated Conversion of English and Hindi Text to Braille Representation" uses this program to convert English and Hindi text to grade 1 Braille, which is then printed out using a printer.

Adrian MOISE et al. [8] "Automated Text to Braille Conversion System" The system makes use of a microcontroller that is coupled to a unique gadget that allows blind people to read.

A Method to Transform Print to Braille P. Blenkhorn discovered this method in [9] in The technique for turning text into braille in the same format as it is saved on a computer was created in this study. However, the system is exceedingly expensive and sophisticated.

M. Alnfai and S. Sampalli [10] developed the "Single Tap Braille system", which is based on braille patterns and can be entered using a single touch. The system was presented in the Proceedings of the 11th International Conference on Future

Networks and Communications. Tap anywhere on the screen to input text, numbers, and punctuation. The user's finger tapping is interpreted by an algorithm that operates in the background to determine the precise related character. However, it is a Text that is position-free is Single-Tap Braille.

Cesar Ortega-Sanchez, Xuan Zhang, and others [11] "A chip that translates text to braille" The translating algorithm is the basis of the translator. The chip was hierarchically described using the Very High Speed Hardware Description Language (VHDL). The test results show that the hardware-based translator outperforms commercial software-based translators in terms of performance while achieving the same goals.

3. CONCLUSIONS

Text to Braille converter with Audio Output for visually Impaired person This system is a great tool for promoting braille literacy. The text to braille code system is a highly useful tool in the modern world. In this project, the solenoid valve is utilized to produce braille script or an alphabet, allowing blind people to understand text and letters. additionally Speech converter filter design This section involves turning the input text into speech. Blind people can use this system to communicate with each other and as an educational tool for their fellow blind students.

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