Braille Reader

Project by:-
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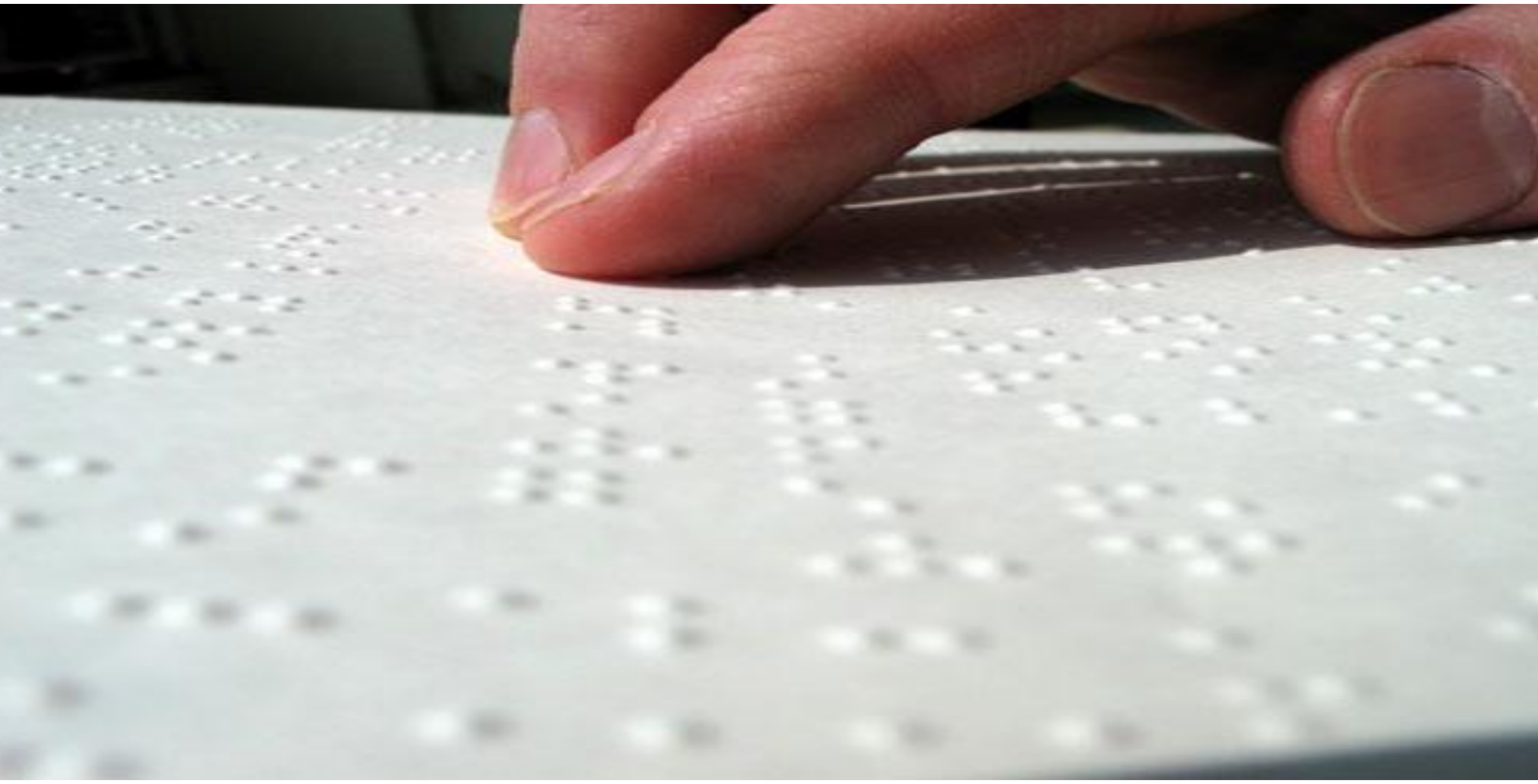

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ABSTRACT

- The project aims to make a portable equipment which can be used by a (blind & dumb)/(blind, deaf and dumb) person to communicate with other people. Something that can be used in the daily life of a person who cannot see, speak or hear". So we ended up with this idea of a braille reader.

INTRODUCTION TO BRAILLE


Louis Braillle(1809-1852)

- The Braille system is a method that is widely used by blind people to read and write. Braille was devised in 1821 by Louis Braille, a blind Frenchman.
- Statistically, history has proven that Braille reading proficiency provides an essential skill set that allows visually impaired people to compete with their sighted peers.
- Each Braille character or cell is made up of six dot positions, arranged in a rectangle containing two columns of three dots each.
- Using the possible combinations of the six dots any character(alphabets(lower or upper case),numbers,special characters) can be generated.

PROJECT DESIGN

IDEAS:-

We had planned our device to be a portable one. However, to communicate this signal to the blind person we could only use the sense of touch. For this problem we had considered the following ideas :

1.Using slots with buttons that would move up and down using a motor. We rejected this idea too as it would make the device difficult to carry.

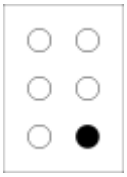
2.Using coin vibrators. This seemed to be a technically feasible idea but we were unable to obtain the vibrators.

3.So we finally settled on using mobile phone vibrators. The blind person would now receive the signal using a 3×2 matrix of mobile phone vibrators.

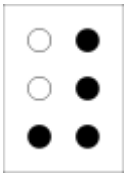
The hardware part of project design consists of Atmega 16(microcontroller),16x2 LCD screen,PS2 keyboard,push buttons,mobile vibrators,resistors(all embedded on a development board).

The six pins of PORT A of Atmega 16 has been connected to the six push buttons which act like the six dots of braille.The blind person can push the any combination of six buttons to display a character on LCD.

a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t
u	v	w	x	y	z				



Capital letter follows.



Number follows.

Above are the examples of some the characters of braille script.

The LCD has been connected to the pins of PORT B of Atmega 16.

For the normal person to communicate with the blind,he can use the PS2 keyboard which has been interafced with the Atmega to display characters on LCD.

KEYBOARD INTERFACING WITH ATMEGA16

The keyboard interfacing was one of the important part of the project.The four wires coming out of the keyboard cord was connected to the four pins of Atmega 16.The four pins are **Vcc,Ground,Interrupt and data pin**.

When a key is pressed,keyboard sends a clock pulse as well as a data pulse.It takes data at every falling edge of the clock pulse.

The data pulse consists of 11 bits.First,a start bit followed by eight data bits,followed by a parity bit and finally a stop bit.

PORTD.2 has been used as the interrupt pin connected to the wire which sends out clock pulse from the keyboard.

PORTD.3 has been as the data pin connected to the wire which sends out data pulse from the keyboard.

The PS2 protocol written in c code (which is a simple RS232 protocol) makes the interfacing possible.

The input given from the keyboard is displayed on the LCD.At the same time,the mobile vibrators arranged in a 2x3 matrix vibrates.For example:-for character ’a’ first vibrator vibrates,for character ‘b’ first two vibrator vibrates.The blind person can feel the vibrators to identify the characters.

The software application includes CVAvr which has been used to write and compile the C code of the project.The microcontroller has been programmed using STK500 programmer in AVR Studio.The C code includes the functions to display the characters of all possible combinations of six dots using lcd_putchar() command.It

also include the PS2 protocol to dispaly characters on LCD.

APPLICATION OF THE PROJECT

There are many braille writers available in the market. But this project is not like those braille writers.

This product is unique in the sense that it allows the 2-way communication between a blind person and a normal person without the use of any audio or video signals.This product can be actually brought out in the market and can be used by the blind person.

CONCLUSION

The project can be said to be a success.But still there are many features which can be added to this project to enhance the applicability of the product we are trying to make.

Scope of improvement:-

- Using mobile keypad instead of keyboard.
- Try to store the data so that can be viewed later.
- Connecting the MCU to the computer using UART

Pictures Related To The project:-

ACKNOWLEDGEMENT

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We also thank our mentor Abhinav Prateek, and for his constant support without whose help this project would not have been a success.

REFRENCE:-

en.wikipedia.org/wiki/Braille

www.omniglot.com/writing/braille.htm