Braille-PAD (Personal Assistant Device)

Today over 39 million people are blind and over 246 million have low vision.

As the world progresses at a rapid rate we want all the people to be a part of the progress, but the visually impaired people are undermined and are not given the privilege that we get.

This century's greatest invention -THE SMARTPHONE is beyond the use of the visually impaired as all the things are sight based. We have evolved an idea that would change their lives forever. By changing the classical light display of the smart phone to a tactile display with pins that can imitate the braille language, this device becomes an exclusive for the visually impaired people.

The people can use the device to read books, use various social media websites, see maps use the navigation, listen to music, use almost all the utility applications. With the addition of a virtual assistant this gadget equips the blind people with all facilities making them no less than common people.

We started off this project with an aim to improve the lifestyles of the visually impaired people. We first approached with the idea of moving pins using Nano motors and gears. This would have been very expensive and the device would be very bulky and thick.

After researching, we found out that electromagnetism can solve our problem, we tested the raising and lowering of pins using electromagnets. Size was still a problem. The solution was found in an electric water purifier. The solenoid valves present in it to control water flow proved to be a UREKA moment for us. They are very small in size and operate on low voltage. The pins arranged in a matrix of 3X2 to denote the braille letters. A set of this matrix can be a complete screen. Programming the pins was easy as we first programmed LEDs using Arduino UNO and then replace the LEDs by the modified solenoid valves.

We have written a very simple code for programming LEDs. The Actual device programming can be like that of an Android phone using high end processors, coding and memory.

Sample code for timed blinking of an LED:

```
// The setup function runs when you press reset or power the board
void setup()
{
 // initialize digital pin 0 as an output.
pinMode(0, OUTPUT);
 }
// the loop function runs over and over again forever
void loop()
{
digitalWrite(0, HIGH);   // turn the LED on (HIGH is the voltage level)
delay(500);              // wait for a second
digitalWrite(0, LOW);    // turn the LED off by making the voltage LOW
delay(500);              // wait for a second
}
```

This Is just a sample.

We are working very hard on the coding part and the assembling of the improved prototype.

The Good News is that this Device delivers interactive and a better life to the blind at a very low cost.

Thank You

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