

Braille to voice and text Reader using Raspberry Pi

According to the World Health organization (WHO), 285 million people are estimated to be visually impaired worldwide among which 90% live in developing countries. Today, in developing countries less than 3% of visually impaired children are learning to read Braille in school. Braille is named after its creator, Frenchman Louis Braille, who lost his eyesight due to a childhood accident. Braille developed his code for the French alphabet in the year 1824. It was developed as an improvement on the night writing system developed by Charles Barbier. Night writing or sonography is a form of embossed writing, designed by Charles Barbier in response to Napoleons demand for a code that soldiers could use to communicate silently and without light at night. There are number of gadgets are developed for reading braille system by using different methods for visually impaired but using this method we can identify the exact letter.

The aim of this project is to design a braille system read the book for visually impaired person without any difficulty. It takes braille input and gives text and voice output. It takes input of voice and image and gives output as Braille. This system uses image processing OpenCV algorithm to extract the letters from scanned image. By using pi camera this system can scan the image. This system uses both Arduino UNO and raspberry pi processor. We are connecting solenoid valves long with relay to gives the braille output. Here relay works as switch to ON/OFF the solenoid valves. This system will display the text on LCD module. To achieve this task raspberry pi loaded program written in python language.

The major features of this project are:

- ▶ Design a braille system using raspberry pi.
- ▶ Pi camera, OpenCV based image processing.
- ▶ It takes braille input and gives text and voice output.
- ▶ It takes input of voice and image and gives output as Braille.

Components used:

- Rechargeable battery.
- Raspberry pi3.
- Arduino uno.
- Pi camera.
- Two Switches for enable mic/camera.
- Six Relays with six solenoid valves.
- Six Buttons as six raised dots.
- MIC.
- Vibration Motor.
- Re-Read button.
- SD card.
- Speaker.
- LCD display.

Software's used:

- OpenCV image processing.
- Linux OS.
- Python language.
- Arduino ide studio.
- Embedded C language.

Block Diagram:

Block diagram

