

Portable Braille

A READING ASSISTIVE DEVICE FOR VISUALLY IMPAIRED
PERSON.

(USER MANUAL)

CONTENT

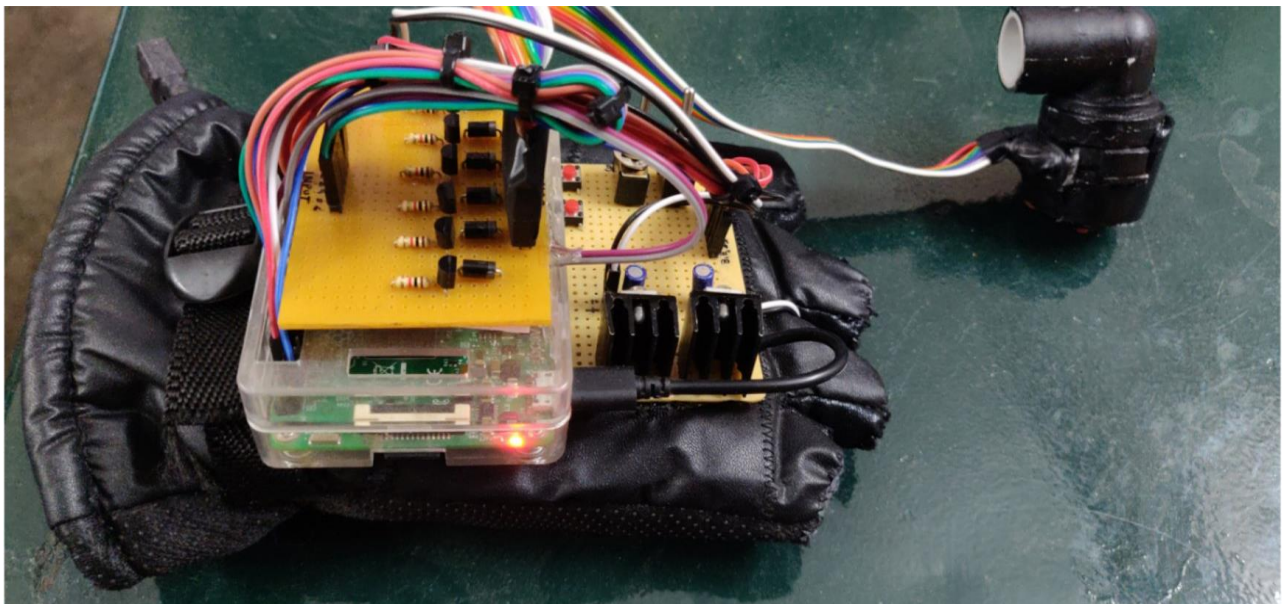
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Getting Started

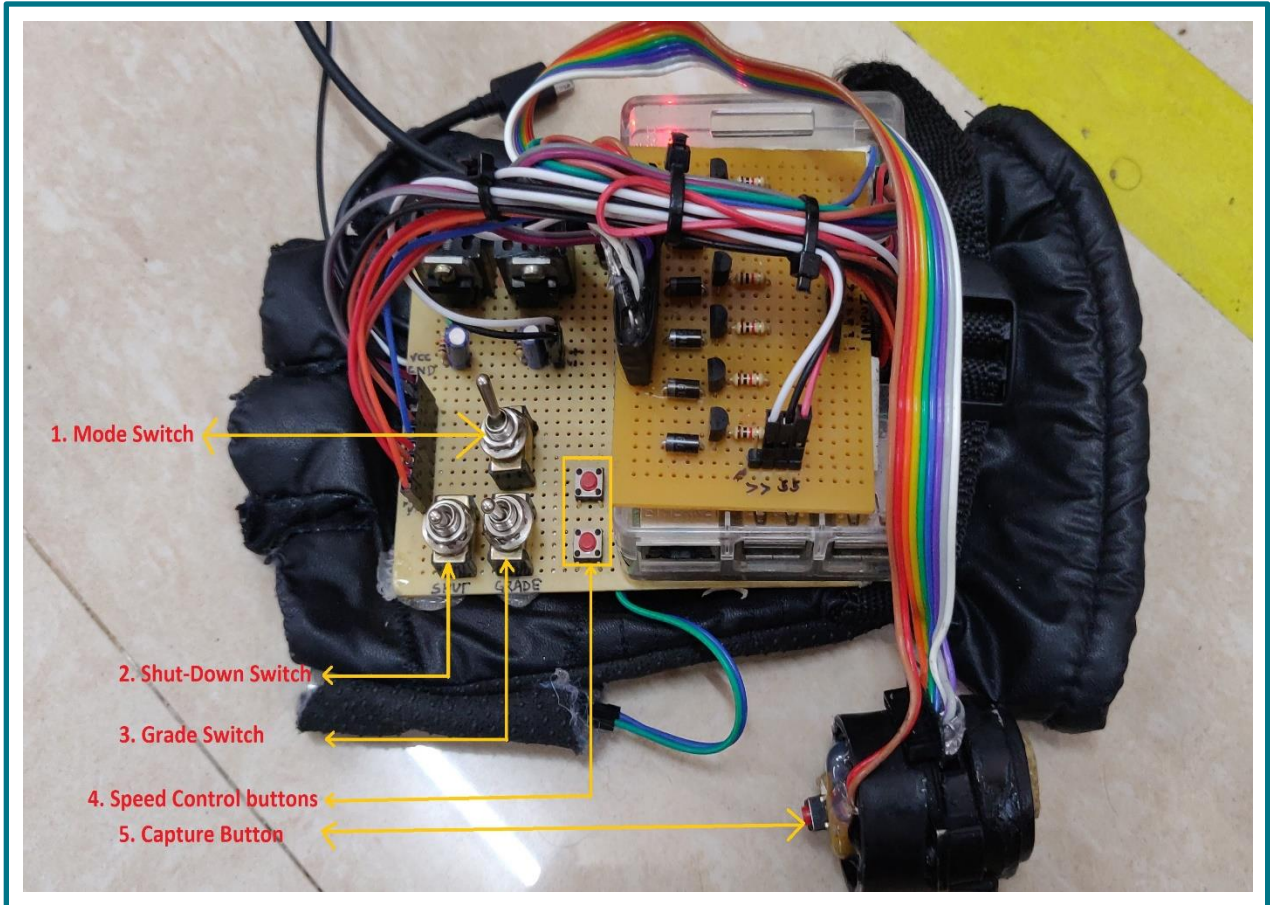
This Section explains the overall component/parts of the Portable Braille Device. The function of the device is to assist the visually impaired person to read the printed text in form of the braille.

This Portable Braille System is consisting of the following part.

1. Camera module attached to the spectacle.
2. Processing unit attached to gloves, which is wearable and have finger slot to put the index finger
3. Power unit consisting of Li-Po battery (20C, 3300mAh).



Understanding Your Device



Control Description

There are five different Buttons/Switch to control the Device.

1. Mode Switch:

This switch is used to shift between A4 mode and book mode. For the right-handed person toggle the switch towards left for A4 mode and right for the book mode.

In A4 mode it will take image and directly process it to remove the unnecessary background.

In book mode it is difficult to directly process the image. So, in this mode user will have to give the coordinate information of the corner of the page by pressing the capture button at each corner position of the page.

2. Shut-Down switch:

This switch is to shut down the processor. Toggle this switch from its initial position to shut down the processors.

3. Grade Switch:

This switch is to shift between the Grade 1 and Grade 2 braille. For the right-handed person toggle the switch towards left for Grade 1 and right for Grade 2.

4. Speed control buttons:

These two buttons are used to adjust the reading speed as per the user convenience. For the right-handed person left-side button will decrease the reading speed by 0.1 seconds and the right-side button will increase the speed by 0.1 seconds.

5. Capture Button:

This button is attached to the bottom of braille terminal. In A4 mode this button is used to capture the image. In Book mode it is used to capture the coordinate of each corner of a page and then taking the required image.

Working Description

This device works in the following four steps.

1. Image Capturing:

The camera module which is attached to the spectacle will capture the image of the printed text.

A4 mode:

To capture the image user will have to press the push button attached to the braille terminal.

If the printed text is not in the frame of the camera it will give vibration feedback for 2 seconds stating image taken is not proper to be processed further. At this point user has to adjust the printed text position with respect to the camera and take the new image till there is no vibration feedback.

Book mode:

In this mode user will have to give the coordinate information of the corner of the page by pressing the capture button at each corner position of the page. The image will be automatically captured after all the four corner is detected.

2. OCR (Optical Character Recognition):

After getting the proper image the device will apply OCR in the image and extract the text from it.

3. Braille Conversion:

As per the choice of grade (either grade 1 or grade 2, chosen with the help of toggle Grade switch) by the user, the extracted text will be converted to corresponding braille grade.

4. Actuation:

After the braille conversion the actuation will start in the braille terminal. The user can then adjust the speed as per his/her convenience.

How to use?

Step 1:

Wear the glove, tighten it properly. Choose the Grade (1 or 2) and Mode (A4 or book). Keep the index finger inside the braille terminal.

Step 2:

Wear the spectacle and switch on the device. If user feels three vibration then the battery is sufficiently

charged. If not, then the battery is low and it should be charged before next use.

Step 3:

Now keep the printed text material near the camera such that the full text material should come inside the camera view.

In A4 mode:

Press the terminal button to capture the image. If the printed text is not in the frame of the camera it will give vibration feedback for 2 seconds stating image taken is not proper to be processed further. At this point user has to adjust the printed text position with respect to the camera and take the new image till there is no vibration feedback.

In book mode:

Press the capture button at each corner of the page.

Step 4:

The actuation is started in the braille terminal. Adjust the speed as per the convenience using the speed control button.

Step 5:

After the reading is completed, toggle the shutdown switch to shut down the processor. After this switch off the power switch to completely turnoff the device.

Safety Information

1. Do not overcharge the battery.
2. If there is any heating in the device, turn-off the device immediately.
3. Do not power off the device without shutting down the processor (use shut down toggle switch).
4. Do not use the device with wet hand.