

TITLE OF THE PAPER- **BLIND MAN READING MACHINE**

CATEGORY- DESIGN APPLIANCE

OBJECTIVE- To make a device which will scan an image, convert it into text and further into audio and give an audio output so that a blind person can know what is written in the image.

APPLICATION- The device specifically focuses on the blind people and enables them to read the text which can't be printed in Braille that easily, like the newspaper. So using our device they can very easily access the information which earlier they could not. It can also be used by the dyslexic children to understand and learn how to read. So this device has a great potential and once the product is made available commercially, the price of the product can be greatly reduced to about Rs. 2000-3000, making it a great success.

JUSTIFICATION OF CATEGORY CHOSEN- In the project, we will be making a device with specific purpose and function. We will make a new product for a specific targeted population. The project is complete by itself and hence stands as an appliance. So we think that the category is well justified for the project.

BASIC EXPLANATION OF PROJECT- The camera will be connected to the raspberry pi board and will be programmed to click photos on receiving signal from the raspberry pi board. The photo then goes to the raspberry pi board where the image to text conversion will take place. We will keep the project specific to a few fonts only as we are only building a prototype. From the photo, the device will match the shapes of the characters with its stored library. It will be programmed such that if the gap between the letters is less, then it will treat it as a continuation of the same word and if the gap between the letters is more, then it will treat it as a space. Doing some more similar operations we will have the text from the image. In the last part, we will use programs to read out the text. For this we will have to use some preinstalled libraries from which the word can be read out. This will then give the audio output and one cycle of reading the text will get over. Once entire text is read out, signal will be sent to the camera to click the next photo as the person turns the page.

PRINCIPLE OF WORKING- When the text to be read is kept under the setup, the camera will click a photo and send it to the microcontroller. The microcontroller will be coded to perform the task of OCR (optical character recognition). So this will involve an image to text and then text to speech conversion. The microcontroller will then read the words from its preloaded databases and give an audio output.

TENTATIVE TIMELINE- The task of image to text and text to speech requires us the full knowledge of the languages in which we code them and the libraries which can help us in the

task. We also need to learn how to interface the microcontroller, the output and the input device (which will be a camera in our case). In December we will explore the Rpi libraries which can do the task of Image to text and text to speech conversion. In January, we will code the Rpi and by the start of February we will start developing the working prototype.

SCOPE AND FEASIBILITY- The project is feasible and some alternative versions of it have already been implemented. However, no such commercial product is yet there in the market. It has a great scope as it facilitates the blind people to read, which is like a boon to them. Moreover, it can be used by the dyslexic children to learn to recognize characters and small children as a teaching tool which helps them to learn to read books. It can help in developing reading habits in children from an early age.