Eyevoce

FOR VISUALLY CHALLENGED

Human visual system plays an important role in recognizing information regarding surroundings. Since visual signal provides with more data than auditory information, visual signals are more effective than auditory signals when the human being perceives information.

However, in case of blind people the lack of visual information constrains them in recognizing information. For a blind person to recognize a subject around him depends on the subject to speak something. In addition, even when the subjects speak it is difficult for the blind to recognize the subject.

INTRODUCTION

OBJECTIVE

In this project, we will be making a prototype of a smart eyeglass that can help a visually challenged person to recognize the person in front of him and learn about obstacles ahead. This will be enabled by face recognition and distance detection features.

COMPONENTS

- Raspberry Pi 3
- Pi Camera
- Ultrasonic Sensor
- USB Cable
- Jumper Wires
- Glass
- Battery 5V/Powerbank 5V
- Headphones

PURPOSE

We propose a **Eyevoce** with a face recognition system to help the blind in recognizing human faces. This system detects and recognizes faces around them. The result of the detection is informed to the blind person through a vibration pattern. The proposed system was designed to be used in real-time and is equipped with a camera mounted on the glasses, a vibration motor attached to the **Eyevoce** and a mobile computer. The camera attached to the glasses sends image to mobile computer. The mobile computer extracts features from the image and then detects the face using Adaboost. We use the modified census transform (MCT) descriptor for feature extraction. After face detection, the information regarding the detected face image is gathered. We used compressed sensing with L2-norm as a classifier. **Eyevoce** is equipped with a Bluetooth module and receives a person's information from the mobile computer.

FEATURES

- Face detection and recognition
- Obstacle detection

COST

COMPONENTS	AMOUNT
Raspberry Pi 3	4000/-
Pi Camera	400/-
Ultra Sonic Sensor	130/-
USB Cable	130/-
Jumper Wires	100/-
Glass	200/-
Battery 5V	170/-
Headphones	600/-
GRAND TOTAL:	5730/-

TIMELINE

Collecting the components   - week 1

Hardware implementation and   - week 2-4
coding

Experimental trails   - week 5,6

Adjustments and adding features   - week 7

Final model   - week 8

REFERENCES

https://robu.in/real-time-face-detection-using-raspberry-pi-connections-and-code/

https://pyimagesearch.com/2018/06/25/raspberry-pi-face-recognition/