AI BASED WEARABLE BLIND VISION ASSISTANT

ABSTRACT

Visually impaired people face a lot of difficulties in their daily life. The proposed solution aims at reducing those difficulties. We intend to propose a solution in the form of a wearable device, that can be worn by a blind person in order to perceive their world in a better way using Computer Vision technology.

The evolution of AI and Computer Vision techniques is empowering the blind overcome their hurdles. This paper is based on a research project-"Headset for the blind". It proposes a system for the visually impaired, in the form of a wearable device to assist them.

The proposed system aims at developing a VR like headset for visually impaired people. Its functionalities include identification of objects, people, environment etc. The device's input and output are completely speech signals. Several computer vision techniques like Face Recognition, Object detection, Environment perception, Photo-OCR etc are proposed to be integrated with a voice based personal assistant that would understand the user's commands, process and respond appropriately. This will help the visually impaired person to manage day-to-day activities better and to navigate his/her surroundings. The intended language used is Python. Face Recognition using OpenCV pre-trained model. Object Recognition using TensorFlow pre-trained model.

The hardware section of this solution is based on Raspberrypi- which is an onboard computer. It has a few input devices attached like Camera, Microphone, reset button and output device being headphones/speaker.

Our solution embeds emerging technologies like Internet of Things (IOT), Computer Vision, Artificial Intelligence, Speech Recognition etc. Using these technological features, we intend to develop a wearable headset.

Keywords—Computer Vision, Artificial Intelligence, Object Recognition, Face Recognition, IOT, Wearable Headset, Speech Recognition, Indoor Navigation