

## Visor Assistive Contraption Using Object Identification

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**Abstract:** Blind students all over the world need assistance to navigate around the city or university campus. It is estimated that 374,400 visually impaired students attended colleges at some point in the United States alone. With the quick technological advancement, new opportunities are promising to make life easier for blind students. To design such a system, the design team had to exercise several design steps typically involved in an engineering design process. The steps incorporate writing research, necessities determination, arrangement conceptualizing, system practical deterioration, useful displaying, model usage and testing. Annoyed by the problem, it is a prototype and evaluates a smart guidance system to help blind students navigate from and to classrooms. The designed system consists of two fully integrated modules; a mobile application. The blind student interacts with the mobile application using voice commands. The object recognition is done by using MATLAB that helps the blind student to avoid obstacles and alerts him/her when walking off track. The mobile application is synchronized via Bluetooth technology.

**Key words:** Password, SMS, fingerprint, modules, technology, system

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### INTRODUCTION

According to the World Health Organization (WHO), there are roughly 39 million blind individuals in the world. Yet, another 246 million are visually impaired to the degree, that they have difficulties in reading and interpreting signs or printed material. In Romania, approximately 120000 people are registered as officially blind. In past years, several electronic aid devices called Electronic Travel Aids (ETA) were introduced as a substitute for the white cane (Lue *et al.*, 2010). Different implementation approaches combine various types of sensors, cameras or feedback channels. They all aim to improve the mobility of visually impaired individuals. Another key aspect of accessibility for visually impaired individuals is magnification (Kumar *et al.*, 2007). A solution for this is provided in where Google Glasses are used to help low-vision Smartphone users by magnifying screenshots of the display that are sent in real time via Bluetooth. Up to 7 outlines For each Second (FPS) can be exchanged by the system at 8x amplification which is satisfactory for errands where the substance does not differ at quick rates. A Smartphone can be utilized to control the device utilizing predefined voice charges and Bluetooth network. The device is convenient and the reason for its utilization is to caution the client when items are available on the strolling way, so, crash can be stayed away from. Distance measurements between the user and

possible obstacles are performed using ultrasonic echolocation and the data provided by the ultrasonic sensor is processed by a microcontroller which also handles the feedback part (Yi and Tian, 2012).

An audit study introduces a PC vision system for outwardly disabled to maintain a strategic distance from the hindrance show in the route way utilizing the camera module they figured the separation of the object gives the reaction through the speech. Gathering of object pictures is stored in the database lastly in the course of the procedure it will order the protest be heard for the visually impaired individuals (Wu *et al.*, 2005). If the device identified any object in the path then pre-recorded speech message stored in memory will give alert through voice. We utilize movement following calculation to control the client towards potential target object areas. By that, everyone can prepared to get thought and moreover can fulfill their necessities in nature (Raja and Rabbani, 2016). Malware detection in android application by means of rigorous analysis of decompiled source code is discussed by Tiwari *et al.* (2016). Bee inspired agent based routing protocol-primary user (biabrp-pu) is discussed by Palanisamy and Mathivanan (2017). A new cryptography algorithm with for effective data communication is discussed in with a fuzzy C strange points clustering algorithm by GaneshKumar and Arivazhagan (2017) and Johnson and Singh (2016).

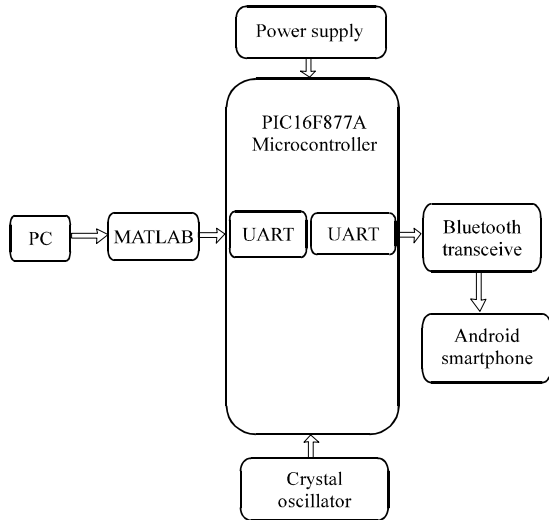


Fig. 1: Block diagram of voice feedback assistive device

## MATERIALS AND METHODS

**System description:** The block diagram of the proposed system is shown in Fig. 1. The object recognition is performed in image processing and is processed by microcontroller to trigger the desired voice feedback. It uses speech criticism to understanding the subject about the eminent hindrance. In perspective of recognized obstacle, huge pre-recorded talk messages are call for using simple essence to talk programming which is presented in the PIC16F877A microcontroller. Such talk messages are passed on to the impaired people using mobile application. In database only the object names will be store and it will be useful for the outwardly hindered people which can be heard using adaptable application with use of Bluetooth handset. The object recognition using voice feedback helps the blind people to avoid obstacles and alerts him/her when walking off track. The blind people interact with the mobile application using voice commands. The mobile application is synchronized via Bluetooth technology.

## RESULTS AND DISCUSSION

The mobile device application is compatible with any Android smartphone and the Bluetooth is by design enabled once you open the application. Once, the Bluetooth connection is established, the mobile application can be naturally used it has no more than one button that must be pressed every time the user decides to send a new command to the MCU (Fig. 1 and 2).

When, the image is given as an input in MATLAB from PC through the serial communication in PIC

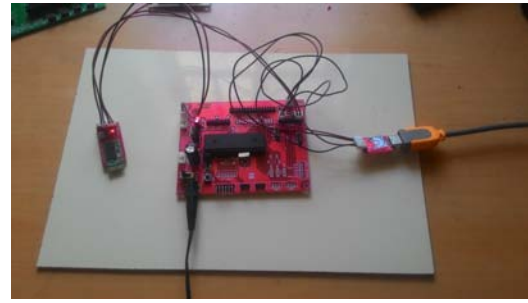


Fig. 2: Prototype of voice feedback blind assistive device

microcontroller the voice will be generated from AMR voice app through Bluetooth. The device is portable and the purpose of its usage is to warn the user when objects are present on the walking path so collision can be avoided.

## CONCLUSION

This study shows the model adaptation of a smart assistive framework which can be utilized by the outwardly disabled or visually impaired individuals. The proposed system is a directing instrument that stays away from crashes with impediments show on the strolling way. This research has been propelled from existing systems which are utilized by outwardly debilitated and blind people consistently. Incorporation of a Smartphone equipped for sending Bluetooth command to the device offers an awesome base for further advance.

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