SMART AID FOR BLIND PERSON

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Introduction:

Vision is the most important part of human physiology as 83% of information human being gets from the environment is via sight. There are number of blind people in the society, who are suffering while exercising the basic things of daily life and that could put lives at risk while travelling. There is a necessity these days to provide security and safety to blind people. When a visually impaired person uses a walking stick, he waves his stick and finds the obstacle by striking the obstacles in his way. Therefore using the existing technologies we provide a solution to the stated problem i.e SMART AID FOR BLIND PERSON.

Smart Aid is a walking stick that assists the blind to accomplish his navigation tasks using electronics. We propose to design an intelligent device which alerts the person on occurrence of obstacles based on distance between the person and the obstacle. Here, this intelligent device not only alerts but also traces the location of the person and informs the current position of the person to his relatives through the use of server.

Objectives:

- The objective of this project (Smart aid for blind person) is to develop a walking stick that assists the blind to accomplish his navigation tasks using electronics.
- To provide information about the obstacles coming in his way.
- A tool that offers a low-cost, reliable, portable, low power consumption and robust solution for navigation with obvious short response time.
- To use GPS for navigation and technologies like GSM for sending emergency alerts to the relatives about current location of the blind person.

Methodology:

Blind and visually impaired people find it difficult to travel in unfamiliar places because they do not receive enough information about their location with respect to traffic and obstacles on the way which can be easily seen by people without visual impairment. Nowadays, there are different technologies like GSM, GPS which help the blind people to navigate. Apart from the conventional navigation systems, blind aid systems can be provided a new dimension of Real-time assistance and artificial vision along with dedicated obstacle detection circuitry. The SMART AID is intended to provide overall measures - Artificial vision and object detection, real-time assistance via global positioning system (GPS). The system consists of ultrasonic sensors, water sensors, RFID sensors, voice module- auditory circuit. The tool provides a low cost and efficient navigation aid for blind which gives a sense of artificial vision by providing information about the environmental scenario of static and dynamic objects around them.
It uses RFID tags for indoor navigation. The RFID sensor is used for detecting blind indoors and we can use GPS for outdoor in real time. For indoor navigation location of, the RFID sensor is attached to the walking stick of blind person and RFID tags are installed in all the areas that need to be identified. These tags serve as a landmark to the person using the cane. Each tag will be equipped with as much information as needed to clearly define the route (i.e. go right, go left etc). The RFID tag is covered by a protective shield to keep it safe from any harm.

It also uses ultrasonic sensors for blind person’s navigation which gives voice alert. These are developed for sending command to relative of person in the form of emergency SMS by system registered cell phone number. The system responds to it by transmitting its current coordinates in the form of Latitude and Longitude using a reply SMS to same Cell phone. The device uses the sensors to detect obstacles within the designed range and gives vibration alerts through a sound to the blind person to avoid the obstacle.

![Fig.: Smart Aid for Blind Person](image)

**Results & conclusion:**

- The proposed tool focuses on the visually impaired people who cannot walk independently in unfamiliar environment.
- The advantage of the system lies in the fact that it can prove to be very low cost solution to millions of blind people worldwide.
- The proposed combination of various working units makes a real-time system that monitors position of the user and provides dual feedback making navigation more safe and secure.
- The system can be used for indoor navigation.
- Detects obstacles and alerts the blind person through speech output.
- This smart tool not only alerts but also traces the location of the person and informs the current position of the person to his well-wishers through the use of server under abnormal conditions.
- Accident prevention.

**Scope for Future work:**

It can be further enhanced by using VLSI technology to design the PCB unit. This makes the system further more compact.