FABRICATION OF SONAR GLASSES FOR VISUALLY IMPAIRED PEOPLE

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Introduction:

In this protocol, when we find objects in distance greater than 30cm then it will not sense, if the distance less than 30 cm then it will sense and create vibrations [1]. The same approach is also used in many applications [2]. One is giving blind people the great accessibility to their environment is the objective of the smart glass system. The key function of the another system is to enable the user in perceiving social signals during a natural dyadic conversation .There was a solution for the blind people to walk safely by detecting obstacle and generating corresponding alert signal according to the distance of the obstacle.

Blind as a special group in society, the needs of society to give them more care and attention, so that they are better able to live independently. However, how safe walking blind life is the biggest problem. Traditional navigation device mostly blind cane, blind by tapping the ground or walking around the object to determine the direction, the structure is simple, single function, easy to use, but the secondary effect is not very .blind such as poor road conditions, uneven, hanging in front of obstacles, cannot be proven accurate, such a serious impact on the safety of blind travelers [4].

A smart ultrasonic glasses for blind people comprises of a pair of wearable glasses, ultrasonic sensors for detection of obstacles in the way of blind man, a vibrator to give the vibrations as per the direction of the obstacle from the man, a central processing unit comprising of Arduino Nano which takes the information from the sensor about the obstacle distance and processes the information according to the coding done and sends the output through the vibrator, power supply is given to the central unit which distributes the power to different components. The sensor is mounted in between of the top bar, right and left and bridge present in optical glasses [3]. All the components are connected to the central unit using wires and the power is given from battery. The best sensors that can be used will be ultrasonic sensors because ultrasound is a strong point, the energy consumption of slow wave propagating in the medium relatively far distance. Therefore often it is used to measure the distance over big length. At the same time, ultrasound for the object in the dark, dust,

smoke, electromagnetic interference, toxic and other harsh environments have a certain ability to adapt, with a wide range of applications. The ultrasonic sensor is fixed at a perpendicular from the glasses. As the blind man goes closer to the obstacle the distance sent by the sensors to the central unit will decrease. Hence the vibrator will take shorter intervals and hence the vibration will be faster. But as the man will go far away the vibrations will take long intervals and hence decrease. These smart glasses are very easy to use and very simple to understand. If a blind uses it for 2-3 times then he/she will understand the working and can handle it easily.

Project's main goals are to improve navigation wearable system based on visual markers recognition and ultrasonic obstacles perception used as an vibrator assistance for blind people [6].

Objectives:

India is the home to the highest blind population. The country has around 15 million individuals with visual impairment. Globally there are about 39 million visually impaired blinds, according to the report published by “National Programme for Control of Blindness (NPCB)” in 2021. Additionally research findings suggest that visual impairment negatively affects the educational activities and economic progress.

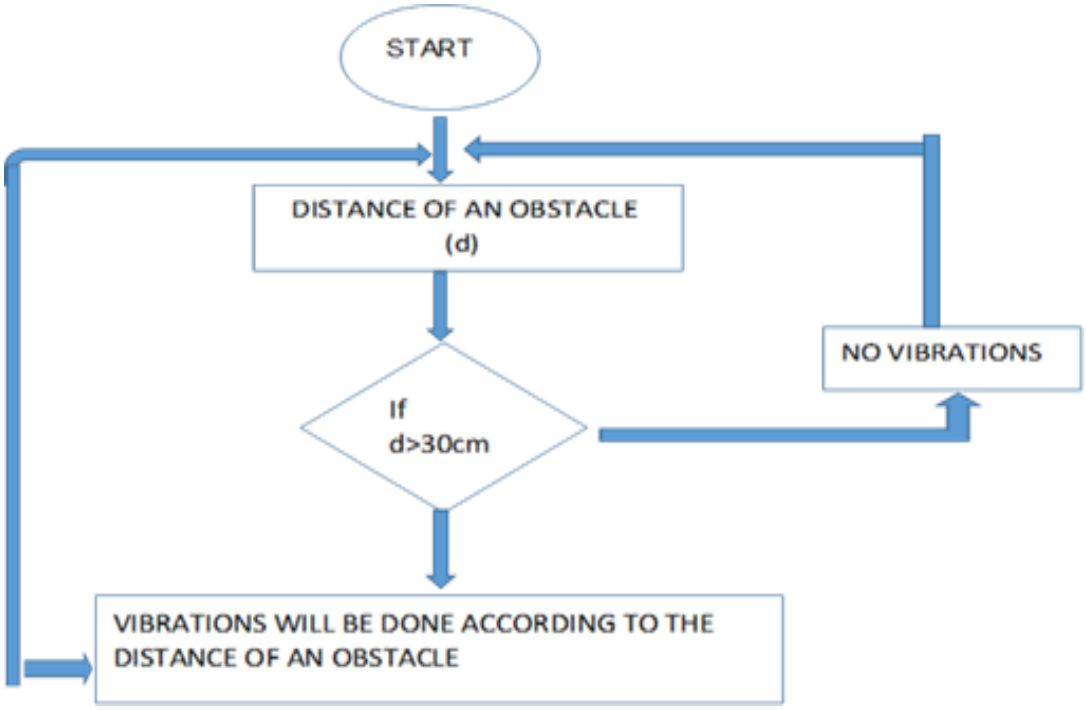
The common problem identified with traditional walking stick are navigating in uneven surface are difficult and it is hard to detect obstacles which are above the ground level. Research on economical, modified –transport system for blind people is very limited.

In the current project, glasses with ultrasonic sensors are fabricated and tested its obstacle detection and efficiency with visually impaired and healthy people respectively. Some of the specific objectives are as follows:

- Fabrication of sonar glasses with ultrasonic sensors to provide vibration based alerts and detection of obstacles.
- Manual testing of fabricated sonar glasses with visual impaired and healthy people to determine its detection efficiency.

Methodology:

This smart ultrasonic glasses for blind people comprise of a pair of wearable glasses, ultrasonic sensors for detection of obstacles in the way of blind man, a vibrator to give the sound as per the direction of the obstacle from the man. The best sensors that can be used will be ultrasonic sensors Often it is used to measure the distance over big length. At the same time, ultrasound for the object in the dark, dust, Smoke, electromagnetic interference, toxic and other harsh.



Result:

The performance of the proposed system has found to be effective. The ultrasonic sensors can detect the obstacle and alert the user with a vibration. The proposed model is easy to wear and use and can be used as a portable model for visually impaired people.

Fig: Finished Model

Conclusion:

The objective of this project is Third Eye for the Blind is to design a product which is very much useful to those people who are visually impaired and those who often have to rely on others. It is an innovation which helps the blind person to move around and go from one place to another with speed and confidence by knowing the nearby obstacles using the help of the

Scope for Future Work

- Distance for detecting the object can be increased from 30cm to 100cm.
- In the future we can install a device which gives out sounds instead of vibrations.
- Solar panels can be used alternative to batteries for power supply.

- Higher range ultrasonic sensors can be used for more precession.
- The coverage of area can be increased form 180 degrees to 360 degrees.
- Form the advancement in technology lightweight components can be used.
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