ROAD CROSSING ASSISTIVE SYSTEM FOR VISUALLY IMPAIRED PERSON

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ABSTRACT: The Internet of things (IOT) is the network of devices, vehicles, and smart home containing electronics, software, actuators and connectivity which allows these things to connect, interact and exchange data. Embedded with technology, these devices can communicate and interact over the Internet and they can be remotely monitored and controlled. The existing system tell us about detect the obstacles in their path through touching poking. The proposed system using RF-433mhz transmitter/receiver module to transfer the data and alert blind person using buzzer to cross a roads. A cost effective solution to the issue is the key contribution of the paper using a simple framework based on Arduino Nano. Moreover, in India this program is more important and essential. The smart crossing systems detect people as well as reduce road accidents.

Keywords: obstacles, ultrasonic sensor, radio frequency transmitter and receiver, controller, vibration.

1. INTRODUCTION

Vision is the most important part of human physiology as 83% of information human being gets from the environment in via sight. The 2011 statistics by the World Health Organization estimates that there are 285 billion people in world with visual impairment, 39 billion of which are blind and 246 with the low vision.

Presently blind people use a white stick as a tool for directingthem when they move or walk. Here we develop a tool which can serve as a blind stick being more efficient and helpful than the conventional one. This will assist the blind person during the walk and provides an alarm if any hurdle is detected within the set range. And also set a small wheel it is used to gives a direction.

As always, people with disabilities, classified as the traffic weak, are exposed to various traffic accident risks, but there are very few disability protection areas Designated around disabled facilities. One of the consequences of being visually impaired is being uncomfortable about safety while travelling independently as they are in unfamiliar environment.

Various techniques are there which a visionless person commonly uses such as guide dogs, white cane or walking cane for navigation. But there are many limitations with this such as the length of the cane as well. The blind still have to face a lot of difficulties with navigation even in the present time. So, on taking this into account we decided to design a product which would help the blind people specifically to cross the road. The aim is to develop a portable, low cost and user friendly navigation system for the blind. This project involves helping the blind to recognize traffic signal pattern as well as obstacles around and to cross the road without depending on others. Usually, blind people use a first aid, such as the white cane. It allows them to detect obstacles in a close range, but cannot help them with detecting the condition of a traffic light. The visually impaired have difficulty seeing the traffic signs, however they can hear. Although there are some audio beepers employed to inform a visually impaired person about what colour the traffic light is by means of different frequency, it is more convenient to have a portable device which can inform the visually impaired about the traffic signal through voice or buzzer. In this paper, we implemented asystem that enables the blind to cross the pedestrian crossings independently. First, the current signal state is accurately recognized so that the visually impaired can know the state of the crosswalk. Ultrasonic sensors are used to detect the obstacles on the path as well. The visually impaired person can navigate faster and more safely among the obstacles by the use of these sensors. The system recognizes crosswalk lights in real time and detects obstacles and guides the current signal.and objects detected to the visually impaired by voice and buzzer. This will provide a safe walking environment for the visually impaired.

2.EXISTING SYSTEM

Existing systems like canes can guide blind people by helping them detect the obstacles in their path through touching/poking. Alternative to the above method some other aids include smart belts, smart rings, smart canes etc, which can assist them by detecting obstacles using ultra sonic sensors. These system produces there an audio or vibration in response
W.   R.T the detected obstacles to warn them.

3.SYSTEM ARCHITECURE

A system architecture is a conceptual model that defines structure and behaviour and more views of a system. An architecture description is a formal description and representation of a system, organized in way that supports
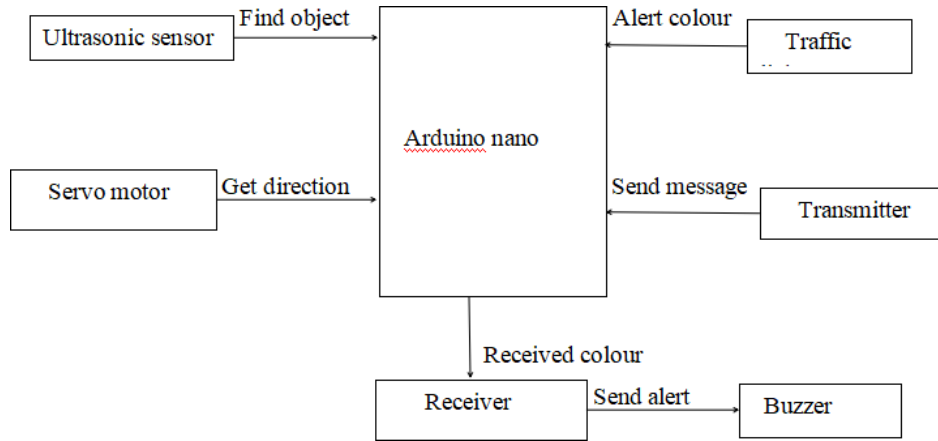
reasoning about the structure and behaviour of the system

4. MODULES

The various modules that are being generated in the proposed design are stated as follows. Each module performs its own task to generate the resultant scope of the project. The project is split into two modules:

- Obstacle detection.
- Signal recognition.

4.1 OBSTACLE DETECTION

In this module, to develop an application for blind people to detect the objects in all directions, detecting pits and man holes on the ground using ultrasonic sensor (hcrs04) which is connected with arduino nano board. If echo is received by ultrasonic sensor. It will calculate object distance and if the object is near to the blind person then the micro servo motor is interfaced with the arduino nano will transmit the information by telling object found take diversion.

4.2 SIGNAL RECOGNITION

Other module to recognize traffic light signals and obstacle detection for visually impaired people. The paper describes a smart system for visually impaired people. since the project is an add-on of current traffic light system and this project consists of two parts that will be installed in various locations in an intersection, we are accruing a wireless communication part between two parts. We only want one-way data transmission, which is from the crosswalk to the traffic light area. In this project, we are using RF 433MHZ transmitter/receiver module to transfer the data. Using the transmitter we are able to send signal information to receiver and with the help of voice output we can generate the required information. And with the help of ultrasonic sensor blind person can detect the object.
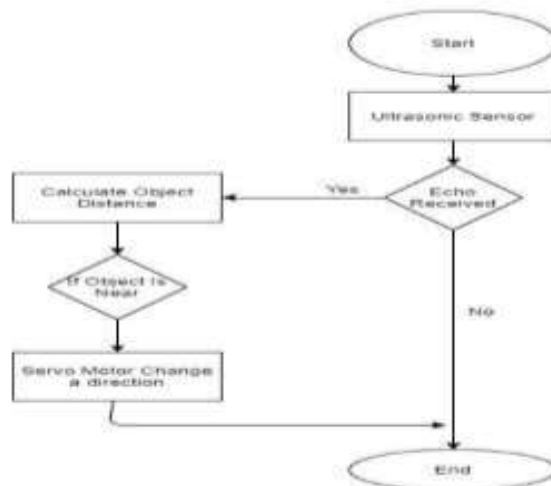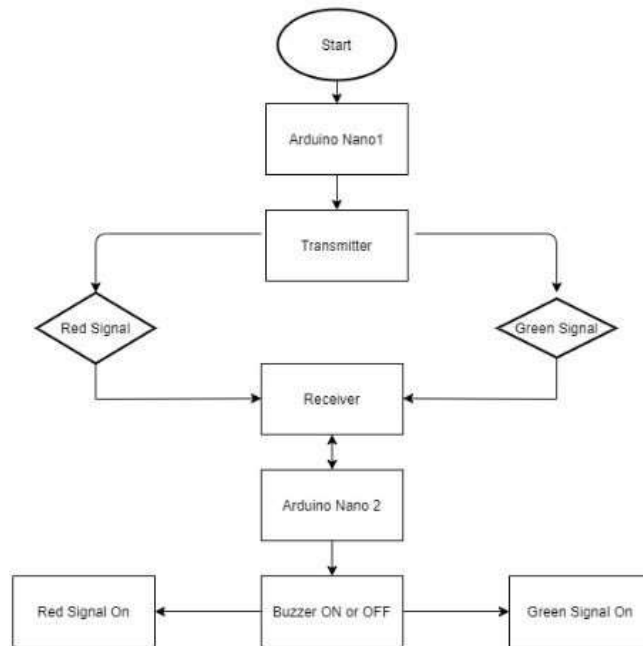
5.RESULTSAND DISCUSSION

The results are obtained by comparing the features that is in existing system and proposed system. Features such as using a servo motor to change a direction, transmitter and receiver using to transfer a data and alert a person using Buzzer between different results in the existing system as well as proposed system.
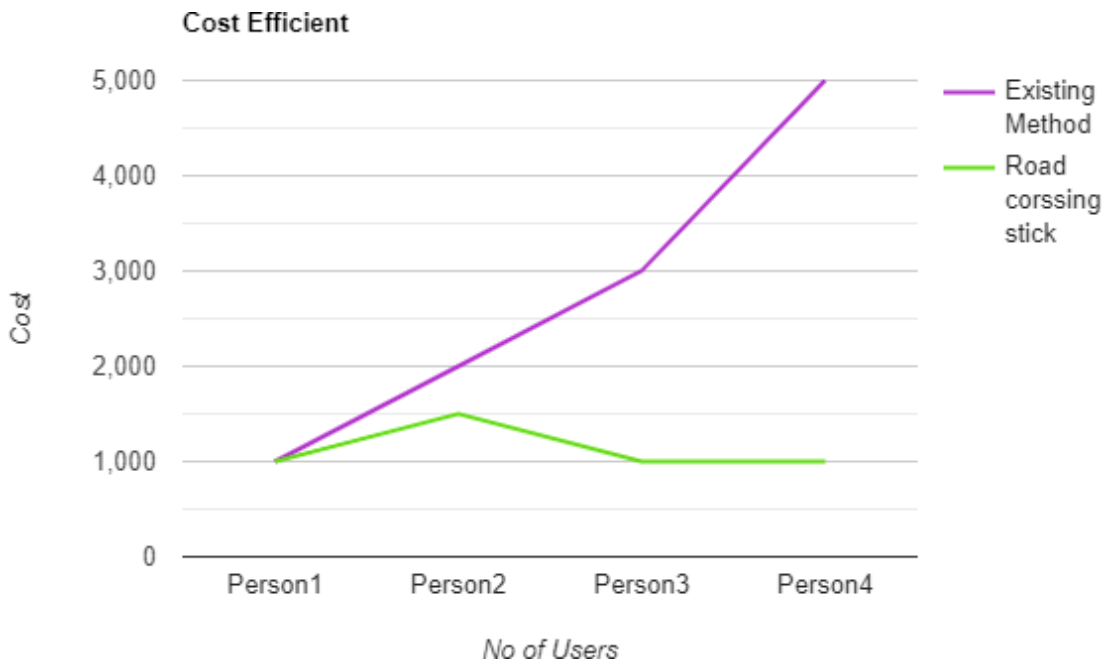
6.CONCLUSION

This system can be applied in the straight path, right angle path and the curved path. At least 1m width is required for the proper management of the stick. The broad beam angle ultrasonic sensors enable wide range obstacle information. The main functions of this system are the clear path indication and the environment recognition. It detects traffic light once the light is red a buzzer is on otherwise a light is green the buzzer is off. With the help of electronic walking stick blind, people can improve more than 15-20% travel speed, reduce minor collision, do not lose their way, and increase safety as compare to unaided equipments

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