

Development of Electronic Stick for Blind with Panic Button Alert

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Abstract - The innovative Blind stick system is capable of working in an user friendly manner, so the visually handicapped person will walk independently without obtaining any facilitate from others. This technique assists the blind to navigate on their own, in case of any emergency things like high traffic density the current location of the person is shared to the family members. The paradigm model consists of a stick and a hand cuff designed with pulse detector. The Blind stick with sensors deployed will observe the obstacles ahead and it'll turn out numerous buzzer sounds relying upon the direction. The buzzer would alert the user. Moreover, the Sensors on stick will observe the water and heat on ground and inform to the person by buzzer. The hand cuff is provided with built in GPS for navigation trailing.

1.INTRODUCTION

The survey conducted by World Health Organization in 2017 estimates that there are 327 billion visually handicapped persons in the world, 36 billion of individuals are blind and 258 billion are with low vision, and around 24 million visually handicapped persons in India. This method designs and develops a conveyable unit (stick) for the blind persons for very easy navigation in all places. The Blind stick with a long cane structure with some alteration at hand cuff parameter is employed as a result of it can feel the trail nature and observe obstacles within the path of a blind man. Being associate rising space of analysis, a review of the foremost recent literature has been applied.

2.LITERATURESURVEY

1. G.J. Pauline Jothi Kiruba, T. C. Mohan Kumar. Nowadays the blind and impaired people are suffering a lot because there are so many struggles for blind peoples to reach their destination and there are dangerous risks that blind persons must face. To avoid uncomfortable walking experience, we have designed a smart electronic walking stick for blind people. Our paper proposes a low-cost walking stick based on latest technology and a new implementation are made for efficient interface for blind people. Basically, the ultrasonic sensor is implemented in the walking stick for detecting the obstacles in front of the blind/impaired persons. If there are any obstacles, it will alert the blind person to avoid that obstacles and the alert in the form of buzzer. daily in different aspects in order to provide flexible and safe movement for the people. In this technology driven world,

where people strive to live independently, this paper propose a low-cost 3D ultrasonic stick for blind people to gain personal independence, so that they can move from one place to another easily and safely.

2.Nitish Ojha, Pravin Kumar Pradhan.

White stick with the ultrasonic sensor, IR sensor and various other equipped technologies (Arduino IC, sensors etc.) is the boon for blind people. The application of ultrasonic ranging scheme along with location tracing (GPS Module) for producing electronic walking stick with improved features for the blinds is a technological advancement. Visually impaired people use their senses like touch or sound for walking in a particular area, which is not possible for outdoor walking. To overcome a these problems of blind people, need to develop a project by using simple available technologies. This walking stick for blind people which have multiple sensors, (Ultrasonic and IR) with the help of sensors it has possible to enhance more features to the walking stick. The features are to detect the obstacle for collision avoidance, it detects the object in all the possible direction from the subject. The other sensor placed near bottom tip of the walking cane to find the pits on the ground. The output of these sensors are taken with Voice record in the different tracks; respond for different sensors to give the audio message to the blind person by the speaker to alert. In this project, sensors plays key role to detect the objects and with the use of GSM Module safety is also concerned.

2. D.Siva kumar, M.Prem Anand. In this paper, we present and describe an electronic stick with buzzer alert to help visually impaired people when they walk in uncomfortable environments. There are more number of people who have difficulties and problems in their day-today life due to their visual problem. Walking with ease and confidence is considered as the one of their difficulties in unstructured environments. By considering this issue, a new electronic stick with Rf remote transmitter and receiver is developed which uses Ultrasonic sensor and buzzer. Ultrasonic sensor is capable of detecting obstacles/objects in front of the visually impaired person if there is any obstacle/object is present in their walking path. Ultrasonic sensor calculates the distance between the visually impaired person and an obstacle. If the calculated distance is in between the given range, there is an alert. Rf remote helps the visually impaired people to find the location of their electronic stick .

Many experiments have been conducted in many places by more number of people to check and ensure the correctness of an electronic stick and the outcomes are good enough.

4.Dada Emmanuel Gbenga, Arhyel Ibrahim Shani. This paper presents the smart walking stick based on ultrasonic sensors and Arduino for visually impaired people. There are approximately 37 million people across the globe who are blind according to the World Health Organization. People with visual disabilities are often dependent on external assistance which can be provided by humans, trained dogs, or special electronic devices as support systems for decision making. Thus, we were motivated to develop a smart white cane to overcome these limitations. We accomplished this goal by adding ultrasonic sensors at specific positions to the cane that provided information about the environment to the user by activating the buzzer sound. We proposed low cost and light weight system designed with microcontroller that processes signal and alerts the visually impaired person over any obstacle, water or dark areas through beeping sounds. The

system consists of obstacle and moisture detection sensors for receiving, processing and sending signals to the alarm system which finally alerts the user for prompt action. The system was designed, programmed using C language and tested for accuracy and checked by the visually impaired person. Our device can detect obstacles within the distance of about 2m from the user.

5.Shafi Ullah, Shabir Ahmed. God's perception of people is an important part of our lives. Only in this way, happy and unhappy people can distinguish the Blessings of God. On the other side, blind people choose to rely on others to travel and other bodily functions. The purpose of this paper is to provide a theoretical and hardware model that combines the latest technology to provide effective and intelligent electronic help for those with no vision. We use an ultrasonic sensor to help the blind by observing obstacles around him and use a color detection sensor to measure the specific path they will use. A Bluetooth module using GPS technology and the blind Android mobile app will provide the required location and, in the event of a panic, send an SMS alert to the registered contact number. The system will provide the blind with practical and simple navigation aids that will help with artificial vision. Keywords—Blue-tooth Module, Android Mobile Application, Ultrasonic Sensors, Colour Sensor, Micro-controller, 9v DC, Vibration motor.

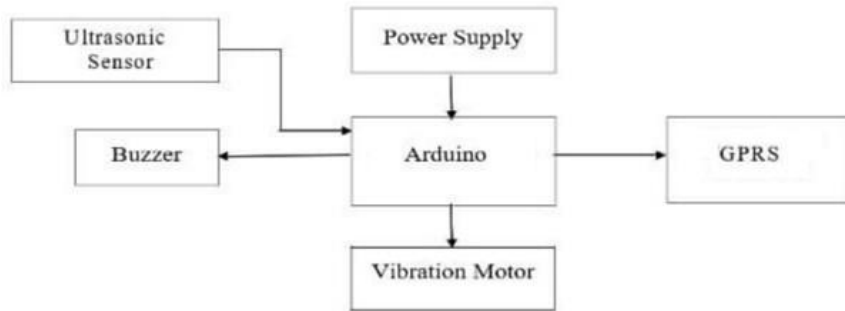
3. EXISTINGSYSTEM

- ✓ In the existing system the blind people are guided by just a stick which they tap on the floor as theywalk.
- ✓ If there is any water in front of the person it cannot be detected by just the tap and the person steps on the water And may slip andfall.
- ✓ The blind person is guided by trained dogs to know their surrounding
- ✓ It produces either an audio or vibration in response to detected obstacles to warn blind.
- ✓ Systems like Sound View use single camera or stereo video cameras mounted on a wearable device to capture images.
- ✓ These captured images are resized, processed further and converted to speech, audio, musical sounds or vibrations.

4. PROBLEM STATEMENT

For most people, who are normal and healthy will reach the destination somehow, but for some unfortunates just like the blind people finding a location becomes a very tedious process. They will be in need of continuous facilitate and fellowship until they reach their desired destination.

5. BLOCK DIAGRAM



6. METHODOLOGY

The operation behind this blind stick is that it's used for special purpose as a sensing device for the blind people. The circuit provides 5V power supply for the circuit and maintains its output at constant level. It is widely used to detect objects using Ultrasonic sensor and IR sensor. If any object is present, the Ultrasonic sensor detects the thing by measuring the distance between the thing and therefore the user and sends the data to the arduino UNO. To see the distance of associate object, calculate the space between causing the signal and receiving back the signal. $\text{Distance} = \text{speed} * \text{time}$. The speed of the signal move through air is 341m/s. The time is calculated between the causing and receiving back the signal. Since the distance travel by the signal is double, it's divided by 2 i.e., $\text{Distance} = \frac{\text{Distance}}{2}$. IR sensor is placed at right and left of the stick to detect the object. Since, it's very small range, it detects the nearer objects. Arduino processes with this data and calculates with the command conditions. If any object is found nearer, it sends the command to the user through the speaker or mike. The command is already stored in the voice playback module that sends alert message to the user concerning the thing.

7. WORKING

On sensing obstacles the sensors deployed with the stick passes the information to the microcontroller. The microcontroller then processes this information and calculates if the obstacle is shut enough. If the obstacle isn't that shut the circuit can do nothing. If the obstacle is shut the microcontroller sends a proof to sound a buzzer. It to boot detects and sounds a definite buzzer if it detects water and alerts the blind. it's embedded as a locality of an entire device a "en together with hardware and mechanical elements. Embedded systems management many devices in common use these days.98 you look after all microprocessors area unit created as a elements of embedded systems. With general counterparts area unit low power consumption,small size, rugged operative ranges, and low per-unit worth. This comes at the value of restricted method resources, that make them significantly tougher to program and to interface with. However, by building intelligence mechanisms on the highest of the hardware, taking advantage of potential existingsensors and conjointly the existence ofa neMork of embedded units, one will optimally manage offered resources at the unit and network levels moreover as offer exaggerated

functionalities, well on the far side those offered.

9.HARDWARE REQUIREMENTS

- UltrasonicSensor:
- ArduinoNodeMcu
- GPS
- VibrationMotor
- Buzzer

ULTRASONIC SENSOR: Ultrasonic sensor is used as, as, it is less affected by the target materials or by color, it is capable of detecting the objects within the range of 4 meters. These Ultrasonic sensors are uniquely designed to resist external disturbances like vibration, infrared emission, close noise, and EMI radiation. The sensor used here is a SRF-04. It needs an short trigger pulse and it provides an echo pulse. Ultrasonic waves are emitted from the module and bounce back once hits an objects and obstructions within the path of the user. The output of the sensor provides modification in voltage with relevance to the distance of the obstacle. Additionally potholes can also be detected using this system.



Node Mcpu :

As Arduino.cc began developing new MCU boards supported non-AVR processors just like the ARM/SAM MCU and employed in the Arduino Due, they required to switch the Arduino IDE in order that it would be comparatively easy to alter the IDE to support alternate toolchains to permit Arduino C/C++ to be compiled for these new processors. They did this with the introduction of the Board Manager and therefore the SAM Core. A "core" is the collection of software parts needed by the Board Manager and therefore the Arduino IDE to compile an Arduino C/C++ source file for the target MCU's machine language. Some ESP8266 enthusiasts developed an Arduino core for the ESP8266 wireless local area network SoC, popularly referred to as the "ESP8266 Core for the Arduino IDE". This has become a number one code development platform for the various ESP8266-based modules and development boards, as well as NodeMCUs.

NodeMCU which calculates the distance based on the program. The obtained value is compared with the fixed value and a vibratory pattern of different intensities is generated.



GPS Module



The NEO-6MV2 is an GPS (Global Positioning System) module and is employed for navigation. The module simply checks its location on earth and provides output data that is line of longitude and latitude of its position. It is from a family of complete GPS receivers that includes the high performance u-blox 6 positioning engine.

VIBRATIONMOTOR:

A vibration motor is employed within the system design, that vibrates with 3 totally different intensities depending on the distance from the obstacle. If the obstacle is extremely close, then Intensity of the vibration will be very high. Intensity of the Motor

decreases as the distance of the obstacle increases

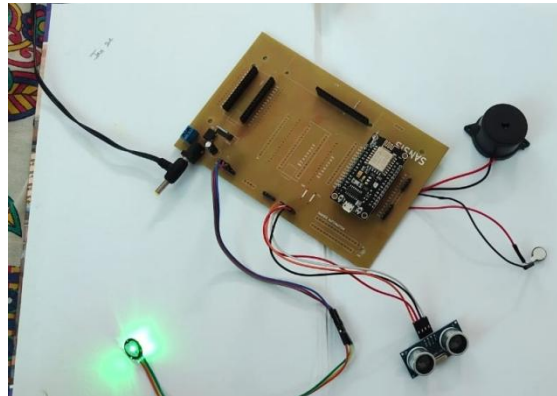


BUZZER: A low frequency piezo buzzer is used to point that the obstacle is very close to the person and there might be a chance of collision. A buzzer is employed along with the vibration motor, which is used to alert the user in crowded areas.



10.RESULT

Smart blind walking stick using PIC16F676 is successfully developed. This paper proposed the design and architecture of a new concept of Smart Stick for blind people. The advantage of the system lies in the fact that it can prove to be a very low cost solution to millions of blind people worldwide. The sensor emits high frequency of ultrasonic waves and give an analog value at the output. The sensor is able to detect objects at ranges between 2-400 cm long.



11.CONCLUSION

This paper presents the implementation of a smart stick that assists a visually impaired person to his destination safe and secure. We've got used varied sensors to sight the obstacles ahead and warn the blind man concerning the obstacle through beep sound. The intensity of the beep sound will increase because the person nears the obstacle that aid him to maneuver aspect of the obstacle.

Where GPS module helps to trace the blind man victimization the info collected by it. just in case of dangerous circumstances the person whose Contact range has been saved is notified t the blind person is in peril, in conjunction with this T6cation of the blind person. The good stick in addition facili es the blind person to make calls from time to time IT emergency. of these choices square measure helpful on disposition a hand to form the visually impaired individuals become independent whereas navigating.

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