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A hidden eye for grouping people based on the internet of things

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ABSTRACT

Getting to your goals and dreams in life requires you to be independent. But there are millions of people who have no goals and can't move. For many years, the groping cane was a well-known way for blind people to get around. Sometimes, even when the cane is used, there is no guarantee that the person will be able to see. The cane does not show them what is in their way. Because of this, barriers put blind people in greater danger. Finally, a plan has been put in place to help blind people get from one place to another on their own. The main idea of this report is to give credit to our skills and services to the society of people who grope.

Keywords: *Cane for groping, self-navigation, and automatic detection,*

INTRODUCTION

A lot of people in India are blind. Being blind means not being able to see, which can be caused by a physical problem, the surroundings, or other things. There are different kinds of blindness: Not being able to see colors or at night, etc. Color blindness means that a person has trouble telling the difference between colors. Night blindness means how hard it is for blind people to see when there isn't much light. People who aregroping need help from others to find their way. They miss out on the chance to see the beautiful scenery. People who are groped may lose their sense of self-worth, happiness, confidence, and freedom in society. Families don't pay attention to blind people, which hurts their mental health. Everyday people who grope on the sidewalks may be hurt by barriers. There are many kinds of barriers, such as pits, ponds, holes, ditches, stairs, and more. People who aregroping have a hard time crossing the street because they don't see the traffic lights, which can cause accidents. That important event made us decide to work on this project. To get around these problems, we've made a new tool that automatically finds hurdles and lets blind people do things on their own.The idea behind "An Invisible Eye for Groping Citizens" is pretty clear. People who are blind learned how to walk with the help of a smart cane. They can quickly see where their sidewalks are having trouble. People who grope get along fine without a psychologist. They feel better about themselves. In this smart world, blind people can get around without any help, which is why we made this smart cane. The groping cane has an ultrasonic sensor built in that is connected to an Arduino. The first part of our theme uses an acoustic sensor to find barriers up to 13 feet away. The ultrasonic monitor is small, doesn't pick up on background sounds as much, and doesn't cost much. Arduino checks to see if the barrier is close or far away. It is sent to the buzzer and vibrating motor. The motor shakes and the buzzer beeps to let you know there is an obstacle. The groping cane is made up of an Arduino board, an ultrasonic sensor, a buzzer, a vibrating motor, a 9V battery, and a toggle switch.

EXISTING SYSTEM

This part talks about what a smart walking stick for people who are blind or have low vision is and how it works. There are two parts to the system: the sensor unit and the GPS unit. The ultrasonic sensor in the sensor unit can find things up to a certain distance away. 40 KHz is the frequency at which ultrasound waves are sent. The location of the target is found by picking up on mirrored waves. At the bottom of the cane, electrodes are set up to show when water is present. There is a microprocessor, GPS, and one voice module in the GPS unit. The GPS data is stored on the microcontroller.

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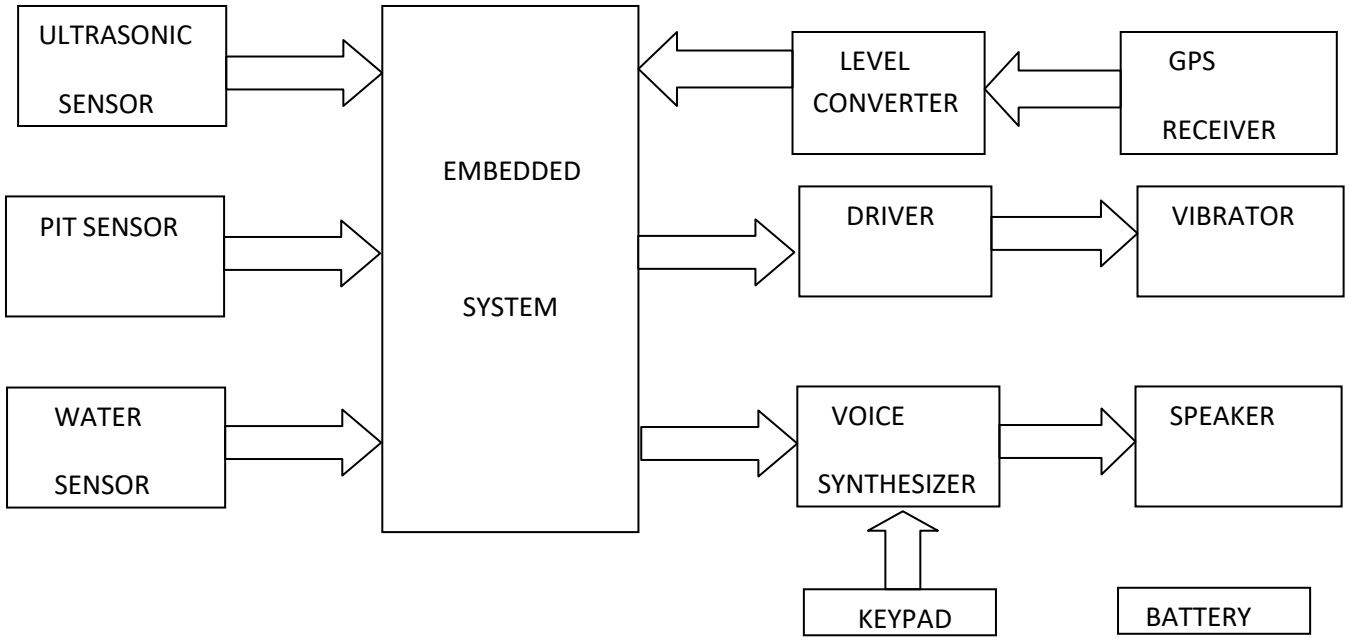
BLOCK DIAGRAM



The PIC16F877A CMOS FLASH-based 8-bit microcontroller is used which is the major component. It comprises of 256 bytes EEPROM (Electrically Erasable Programmable Read Only Memory), two Comparators, Analog to Digital converter, USART (Universal Synchronous Asynchronous Receiver and Transmitter), parallel slave port, etc. The GPS provides efficient positioning, navigation to the users and used to find the current location. Along with the location, time is also specified for unlimited users. GPS facilitates applications in smart phones, banking, agriculture, geologists etc. Water sensor is added to detect ponds, water sources etc. A level converter is used to shift levels from low to high and vice versa. The output consists of speaker or headphone to produce sound.

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SYSTEM SPECIFICATION

SPECIFICATION	FUNCTIONS
SOFTWARE CONFIGURATION **1.**Arduino : 	Provides Integrated Development Environment(IDE). It is a combination of hardware and software to build interactive devices for beginners. It consists of 14 digital pins, 6 analog pins and operates at a voltage of minimum 5V.
HARDWARE CONFIGURATION **2.** Ultrasonic sensor : 	Ultrasonic implies high frequency sound waves above the hearing range of humans and sensor refers to detection of objects. Types: Proximity detection, Ranging measurement. It has 4 pins:Echo, Trigger, Vcc, Gnd pins.
3. Jumper wire: 	Jump wire indicates the electrical contact between two components.Types: Male-to-Male, Male-to-Female, Female-to-Female.
4. Vibratory motor**:** 	Vibratory motor means a motor which is used to produce vibrations. Types: Coin (flat), Cylinder (bar).
5. Buzzer 	Electronic device to produce sound. Types: USB contact buzzer, electronic buzzer, etc. Works on the principle of Inverse Piezo- Electricity.

PROPOSED SYSTEM

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In this theme we are implementing a groping cane based on IOT**.** Vision impaired people's life is in the verge of danger. They are completely dependent on others and lose their freedom. With this smart blind stick, visionless people can navigate independently. The groping cane makes the blind aware of the obstacles with the help of motor and buzzer. There are three blocks namely Input, Controller and Output.

BLOCK DIAGRAM

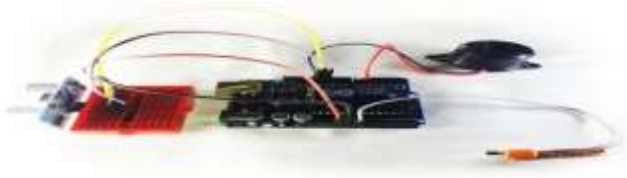
The sound sensor in the input block can automatically find objects up to 13 feet away. It has four pins: Ground, Echo, Trigger, and Vcc. When the Trigger pin is linked to Arduino pin 12, high frequency sound waves are sent. The waves hit the target, bounced back, and were picked up by the echo pin, which is connected to Arduino pin 11. The target's distance from the monitor is found by measuring the time between the waves that are sent and those that are returned. We know that Distance = Time * Speed. The monitor works up to 400 cm away. So, Target distance = high level echo time / 58 cm has been found. The sensor's reaction is the same no matter what the target is like. It is set up to sense things without touching them.

The Atmel ATmega328p microprocessor board that makes up the Arduino UNO is part of the driver. It has 14 digital pins and 6 analog pins that can be used for input and output. The codes can be put into the Arduino through a USB port. It also has a "Reset" pin that you can use to erase all the data and enter the new code. It gets information about the objects along with the echo information from the sensor. As long as the object is there, it checks to see if it is too close (less than 70 cm) or not. Once barriers have been found, the information is sent to the output unit.

A vibrating motor and a bell make up the output unit. A vibrating motor is exactly what it sounds like: a motor that makes noises. The centrifugal force is caused by a DC motor with an uneven mass. If the motor is built into an item, the centripetal force will make the object vibrate 100 times per second. Vibratory motors are used because blind people can feel things. As soon as it gets input from the Arduino, it starts to work at a frequency of 283Hz and make movements.

Buzzer is the second part of the output unit. We used a piezo buzzer, which is a type of alarm that works with direct current (DC). It is a device for sending audio signals and making sound. There is a hole in the top that is covered on the inside with a yellow metal disc that lets sound travel. Buzzer works on thethe idea behind inverse piezoelectricity. The buzzer gets DC power from Arduino's digital pin 8. This makes the metal plate bend in the opposite direction, making a beep sound to wake up the blind person.

SCHEMATIC DIAGRAM



RESULTS

CONDITIONS	PRACTICAL OUTPUT	THEORETICAL OUTPUT
Absence of target& at a distance greater than 70 cm	Motor and Buzzer in OFF condition.	Motor and Buzzer in OFF condition.
Target at the distance less than 70 cm	Motor and Buzzer in ON condition.	Motor and Buzzer in ON condition

CONCLUSION AND FUTURE ENHANCEMENT

To help visually disabled people in a useful way, a one-of-a-kind, low-cost, and flexible computer support system is being suggested. The system has been planned, built, and tested. It showed the highest level of accuracy in finding hurdles. Ultrasonic sensors have been fully used to help blind people move around better. There is no need for a big gadget or any special training for this method. It got rid of the issues that blind people were having with direction. All of these things work together to make touching people independent while they're traveling. In the future, the GPS module and GSM/GPRS could be used together to their full potential. For example, the GPS module could be used to help find a blind person by collecting data. People are given their phone number and where they are right now so that they can be reached in an emergency. It also lets people call at important times. Along with this, a water monitor was added to find water and keep people from falling into a pool. As our project moves forward, these are some of its goals.

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