A

Project report

On

Smart Blind Stick

Dissertation Submitted To The

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Kachchh University

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Master of Science in Computer Applications and

Information Technology (MSc. CA & IT) Sem VI

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Department of Computer Science

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CERTIFICATE

This is to certify that **Jigar S. Zola, Exam No. 113006**, student of Department of Computer Science K.S.K.V. Kachchh University, Bhuj(Kachchh) has carried out his **semester VI, Project (CCCS625)** as a partial fulfilment of Master of Science (Computer Application and Information Technology).

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This is to certify that **Pratham A. Ruparel, Exam No. 113014**, student of Department of Computer Science K.S.K.V. Kachchh University, Bhuj (Kachchh) has carried out his **semester VI, Project (CCCS625)** as a partial fulfilment of Master of Science (Computer Application and Information Technology).

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Acknowledgement

We have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals. We would like to extend our sincere thanks to all of them.

We would like to express our gratitude towards Mr. Madhav Kacha & Harsh Gor He was student of our department (Bhuj) for giving us this idea and all the necessary information and data to create this Project.

We are highly indebted to Dr. Mahesh Mulani Our Head of the department and Mr. Madhav Kacha our guide for this project and faculties from Department of Computer Science for their guidance and constant supervision as well as for providing necessary information regarding our project and also for their support.

We would also like to thank our friends and family for co-operation and encouragement which help us in completion of this project.

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Description

What is smart blind stick?

Have you ever noticed blind people?

Problem:-

According to The WHO majority of people with vision impairment and blindness are over the age of 50 years. However, vision loss can affect people of all ages.

Their life is full of risk. They can't walk without the help of others. Their life always depends upon others. Let's make something for them so they can walk without any fear.

Solution :-

In our society many people had trouble walking in public and coming out at public places so for them we are made this product become an eye in their life. Blind person can walk without anyone's help.the smart blind stick automatically detects objects in front of the person and give him a response to the person by bipping warning sound .

Through this , Blind person can aware about the objects in front of him.

How it works?

Construction and working:

- ⇨ This project having four main components 1 Arduino Nano 2 HC-SR04 2Ultra Sonic Sensor 3 Servo motor and Buzzer.

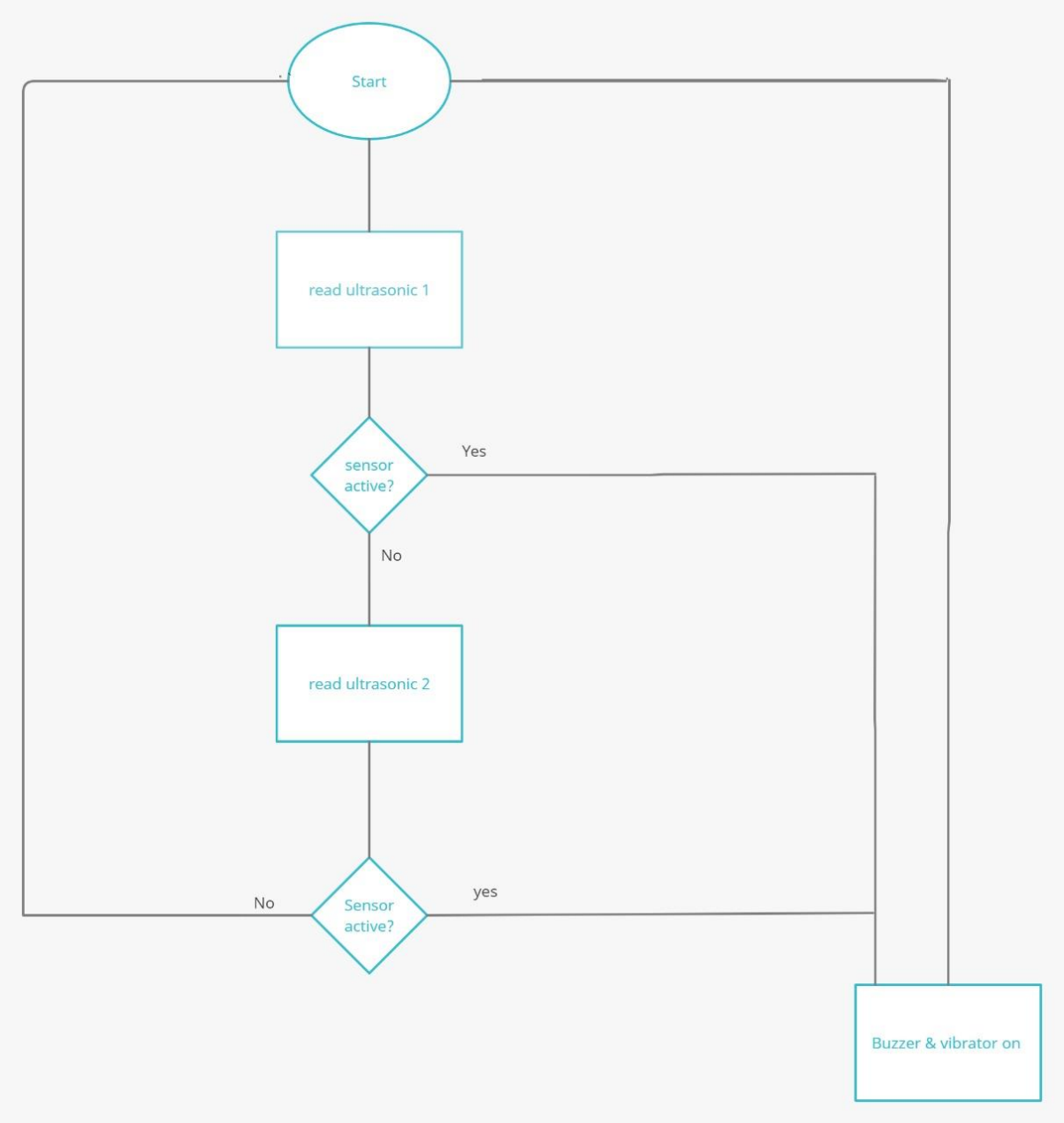
- ⇨ Ultrasonic sensor, buzzer and Servo motor are connected to Arduino Nano trough Breadboard and it will be placed on Smart blind stick.

- ⇨ Here work of servo motor is it will rotate our one of the ultrasonic sensor which one placed on cap and that servo motor keep rotating that ultrasonic sensor and it'll continuously rotating from 0 to 180 degrees. It'll help us to detect side objects/obstacle.

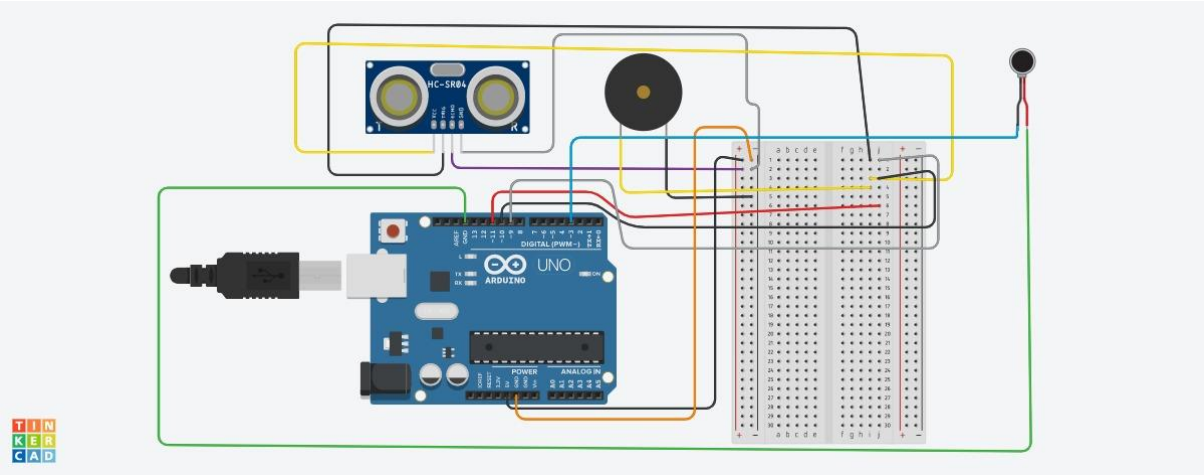
- ⇨ So whenever obstacle/human/animal/object comes front of the blind person ultrasonic sensor will detect that obstacle/human/animal/object and it'll send signal to buzzer.

- ⇨ Buzzer will beep It's audio sound and blind person will know there is object so he/she will change his/her way and because of that he/she will be saved.

Flow-chart:


Start
read ultrasonic 1
sensor active?
Yes
No
read ultrasonic 2
Sensor active?
No
yes
Buzzer & vibrator on

Circuit Diagram



Hardware Requirement:

Ultrasonic Sensor:

The Ultrasonic sensor uses to sonar to determine the distance of an object just like the bats do. It offers excellent non-contact range detection with high accuracy and stable readings in an easy to use package from 2 cm to 400 cm or 1” to 13 feet. The operation is not affected by sunlight or black material. It has +5v dc power supply.

Servo Motor:

A Servo motor has a shaft that can be, using coded signals, positioned to specific angular positions. Luckily for us, we won’t have to understand the coded signals required to rotate the shaft to a specific angle. The Arduino servo library does it for us. It will rotate from 0 to 180 degrees.

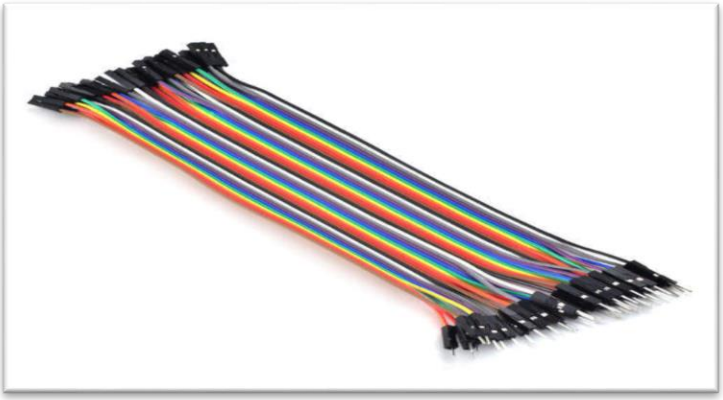
PCB:

A Printed circuit board (PCB) Mechanically supports and electrically connects electronic components using conductive tracks, pads and other features etched from one or more sheet layers of copper laminated onto and/or between sheet layers of a non-conductive substrate. Components are generally soldered onto the PCB to both electrically connect and mechanically fasten them to it.

Buzzer:

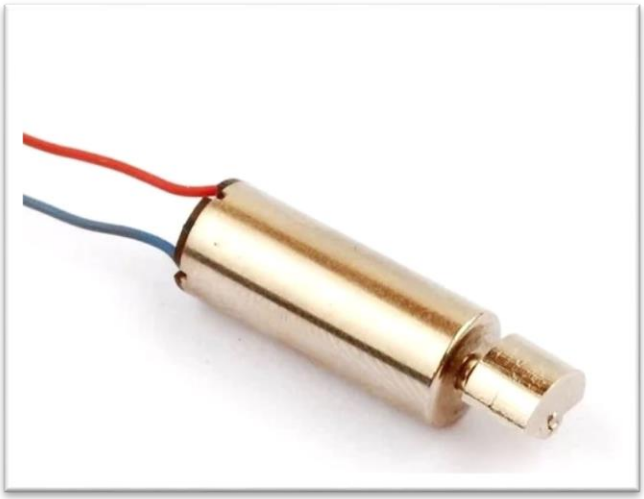
A buzzer or beeper is an audio signaling device. Which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and conformation of user input such as a mouse click or keystroke.

Jumper wire:



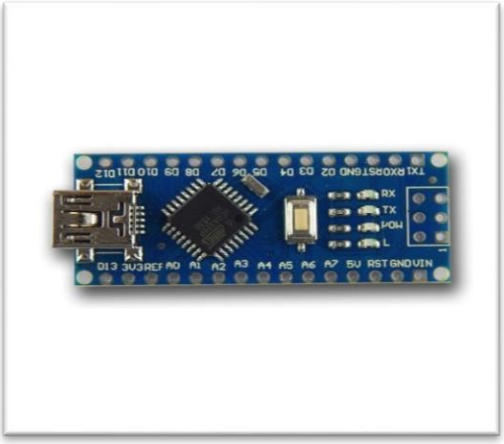
Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboard and other prototype tools in order to make it easy to change a circuit as needed. Jumper wires come in variety of colors, The colors don't actually matter.

Vibration Motor:



Vibration motor is a compact size coreless DC motor used to informs the users of receiving the signal by vibrating, no sound. Vibration motors are widely used in a variety of applications including cell phones, handsets, pagers, and so on.

Arduino Nano:



The Arduino Nano is a small Arduino board based on ATmega328P Microcontroller. The connectivity is the same as the Arduino UNOP board. The Arduino Nano is organized using the Arduino (IDE), which can run on various platforms. The DC power jack is absent in Nano. Thus, we can't use a battery to apply any external power supply. Using the constant voltage, the Arduino Nano is used to produce a clock of a precise frequency.

Technical Specification:

- ⇨ The operating voltage of the Nano board varies from 5V to 12V.
- ⇨ The total pins in Nano are 22 input/output pins.
- ⇨ There are 14 digitals and 8 Analog pins
- ⇨ There are 6 PWM (pulse with Modulation) pins. The 6 PWM =>
- ⇨ Pins in Arduino Nano are used to convert the digital signals into the Analog signals.
- ⇨ We can also connect Arduino Nano to WIFI.

Software Requirement:

1. Arduino IDE
2. Tinker CAD(For Circuit diagram)

Arduino IDE:

The Arduino Integrated Development Environment is a cross-platform application that is written in functions from c and C++. It is used to write and upload programs to Arduino compatible boards. But also, with the help of third-party cores, Other vendor development boards.

Tinker CAD:

Tinker CAD is a free, easy to use app for 3D design, electronics, and coding. It’s used by teachers, kids, hobbyists, and designer to imagine, design and make anything.

Cost Estimation:

Arduino Nano: 250

Ultrasonic Sensor (2): 320

Servo Motor: 130

PCB: 35

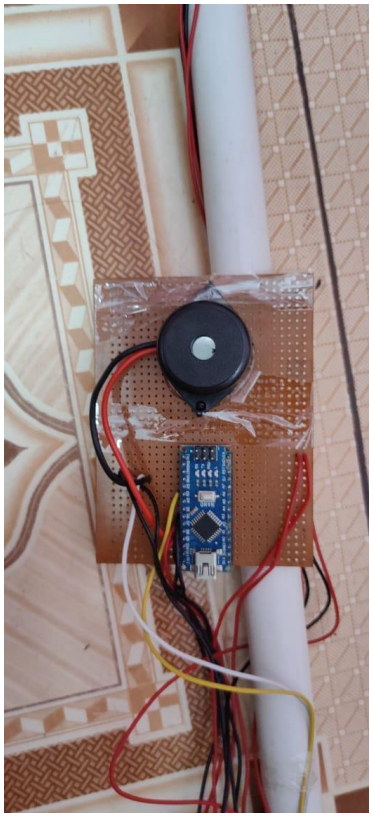
12V Buzzer: 30

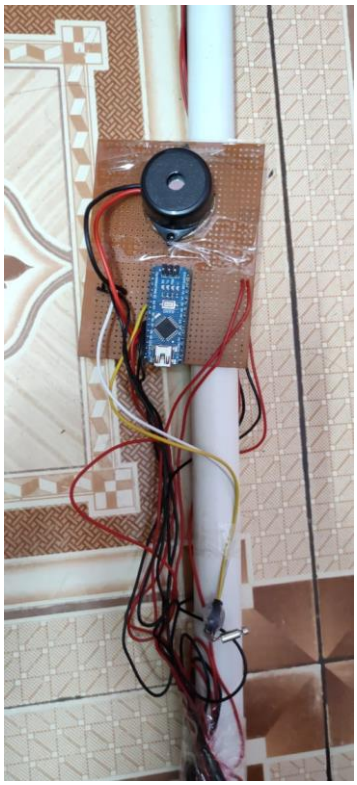
Jumper Cable: 30

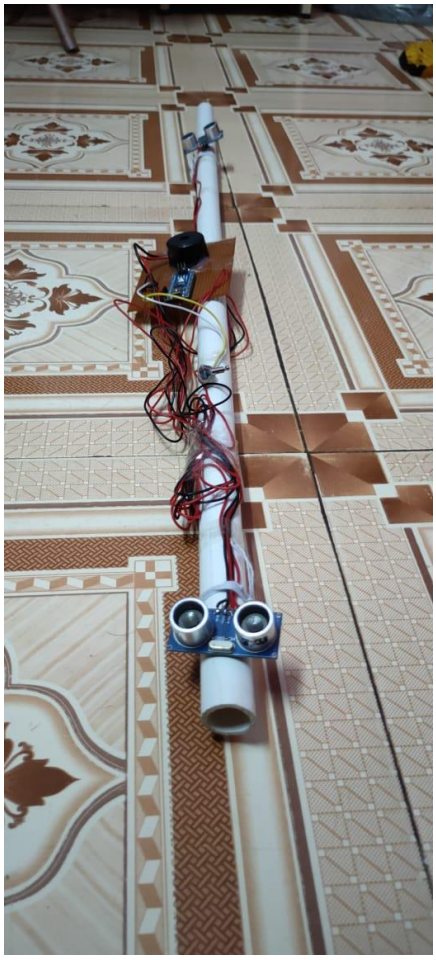
USB mini cable: 70

Total: 865 Rs.

Screen Layout:







Conclusion

The project of “The Smart Blind Stick” has approached in final stage now. We have done our level best to create this IOT Project much effective and smooth to operate.

The Blind Stick is tested many times and problems are solved. Both Us and the blind person is happy with this project. Blind person is much happy because we helped them by create this project.

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