International Islamic University Chittagong

Department of Computer Science and Engineering

Project Proposal

Course Code - EEE-2422

Course Title - Electrical Drives and Instrumentation Lab

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Project II
Smart Blind stick

Tentative Outline		
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Objective:

We all have seen blind people? Their life is full of risk, even they can't walk on their own. That's why these people are always dependent on other persons or use a walking stick. The main aim of this project is to help a disabled person to live a normal life using advanced technology.

Here we will build a " **Smart Blind Stick Using Arduino and Ultrasonic Sensor"** device which will help blind people to walk with ease independently. This Device will warn blind people whenever any obstructed comes on their walking path.

The smart stick for the blind as the name suggests is a device for the visually impaired to guide the user to respective destination and avoiding to collide with the obstacles. It uses an ultrasonic sensors HC SR 04 to detect the obstacles in between.

Equipment:

Product	Quantity
Arduino Nano R3	1
Ultrasonic Sensor - HC-SR04 (Generic)	1
Buzzer	1
9V battery (generic)	1
9V Battery Clip	1
Pushbutton Switch	1
Vibrating Motor	1
Jumper Wire	1
Stick	1
Glue	1
Scotch tape	1

Block Diagram:

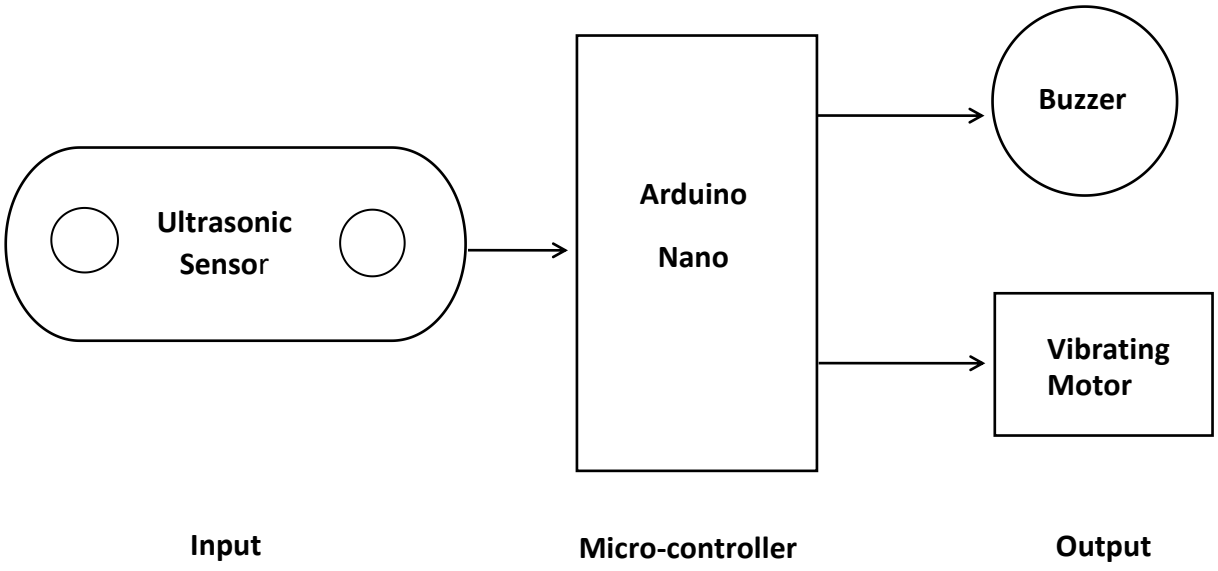

Fig: Block Diagram of the Circuit

Working Principles:

This project is build based on a simple concept. Five key components are needed to build this project, An ultrasonic Sensor , an Arduino board, Buzzer, a Vibration motor and a Battery.

The ultrasonic sensors work based on a principle which called “The Time of flight” using the speed of sound. A rang of pulses between (20 KHZ to 200 KHZ) is emitted by the sensor. The time difference between the outgoing signal and the reflected signal known as (Δt) and the speed of sound at 20oc is equal to 343.5m/s.

When we turn on the circuit power supply, at the same time the Ultrasonic sensor is transmitting ultrasonic sound waves from the transmitter parts. when any objects come in front of the sensor, then the ultrasonic sound waves reflect back from the object surface to the sensor receiver part, then the sensor receives this wave and generates Output.

This output data goes to the Arduino nano. It uses Arduino as the main controller.Then the Arduino calculates the distance between the sensor and the objects.

If the sensor detects the distance is less than 30 cm. Then the Arduino sends operating voltage to the Buzzer and the Vibrating motor. Now the buzzer generates sound and the motor start Vibrating.

When the sensors do not detect an object. In this condition, the buzzer and the motor are stopped.

Circuit Diagram:

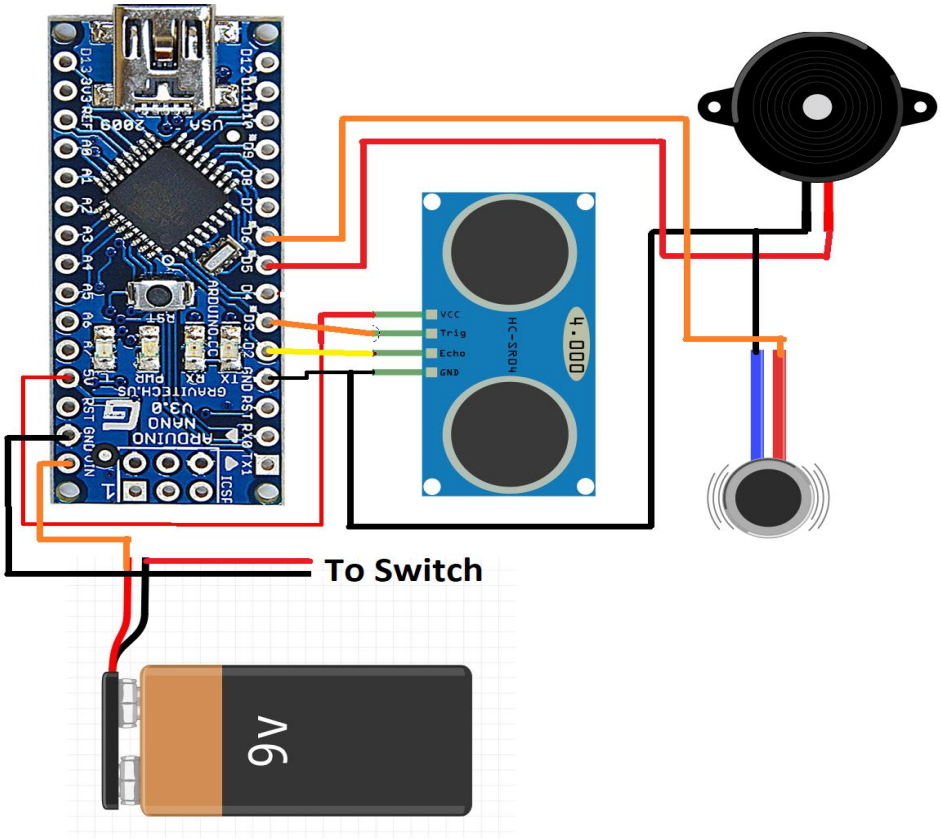

Fig: Diagram of the Circuit of the Smart Blind Stick

Discussion:

In this Project, We will be creating a **Smart Blind Stick** that will help the blind people to move from one place to another without others help. this could also be considered a crude way of giving the blind a sense of vision. this stick reduces the dependency of visually impaired people on other family members, friends and guide dogs while walking around.

the proposed combination of various working units makes a real-time system that monitors position of the user and provides dual. the smart stick detects objects or obstacles in front of users and feeds warning back. the advantage of the system lies in the fact that it can prove to be a low cost solution to millions of blind person worldwide.