

## Design and Implementation of Smart Stick for Visually Impaired People

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### ABSTRACT :

The smart stick comes as a proposed solution to enable visually impaired people that have difficulties in detecting obstacles and dangers in front of them during walking. We seek in our project to provide a smart stick that is affordable and suitable for visually impaired people. The smart stick sounds an audible alarm when there is an obstacle at 30 cm away from the stick, thus enabling the visually impaired people to avoid them before impact.

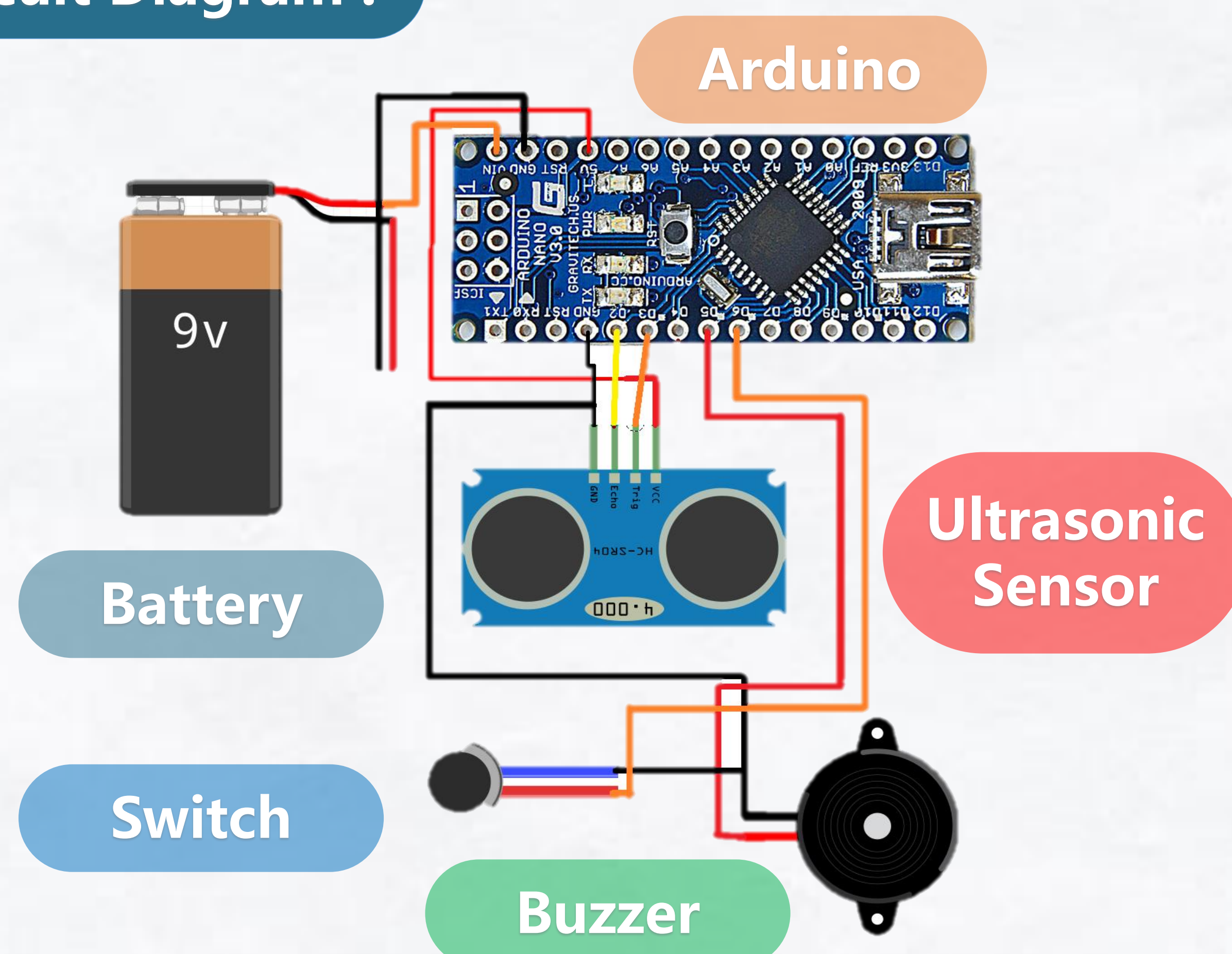
### Objective :

The main objective of this project is to help visually impaired people to walk with ease and to be warned whenever their walking path is obstructed with obstacles.

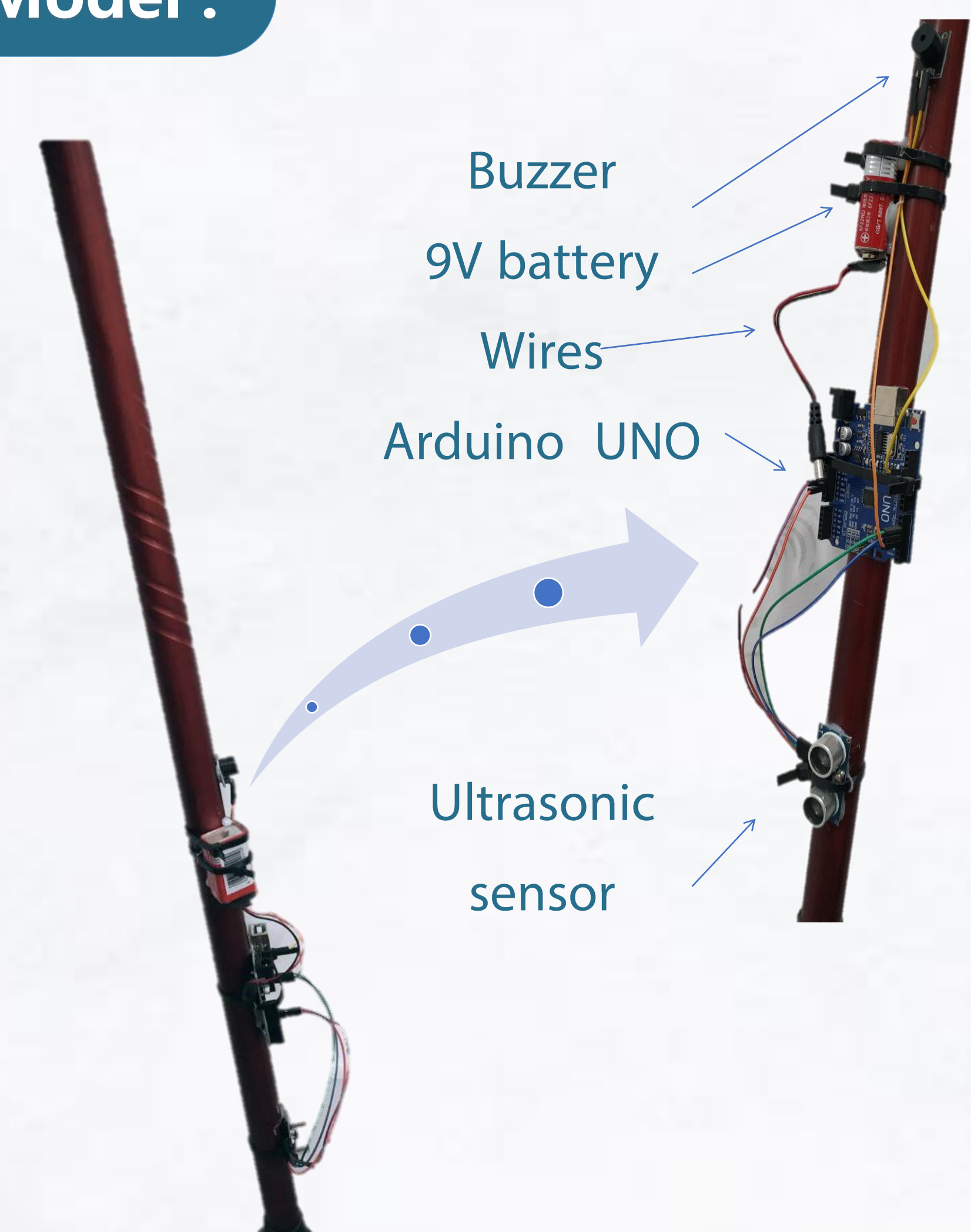
### Methods :

The system is designed to act like an artificial vision and alarm unit. It consists of five components: ultrasonic sensor, buzzer, 9V battery, switch and microcontroller (Arduino Uno) to receive the sensor signals. The electronic system has been controlled using Arduino UNO. When the switch is on the top of the stick; the ultrasonic sensor will immediately send the signal from the transmitter. However, when the signal impacts the level surface it reflects back to the sensor's receiver. Therefore, the Arduino will send a pulse to the actuators (in this case, the vibrating motor and the buzzer) to

### Circuit Diagram :



### Final Model :



### Conclusions :

The smart walking stick, constructed with utmost accuracy, will help the visually impaired people to move from one place to another without the need of external help.. The advantage of the system lies in the fact that it can prove to be a low cost solution to millions of visually impaired people worldwide.

### References :

Hubert Henry Ward, Programming Arduino Projects with the PIC Microcontroller: A Line-by-Line Code Analysis and Complete Reference Guide for Embedded Programming in C 1st ed. Edition, APress, USA, 2022.