



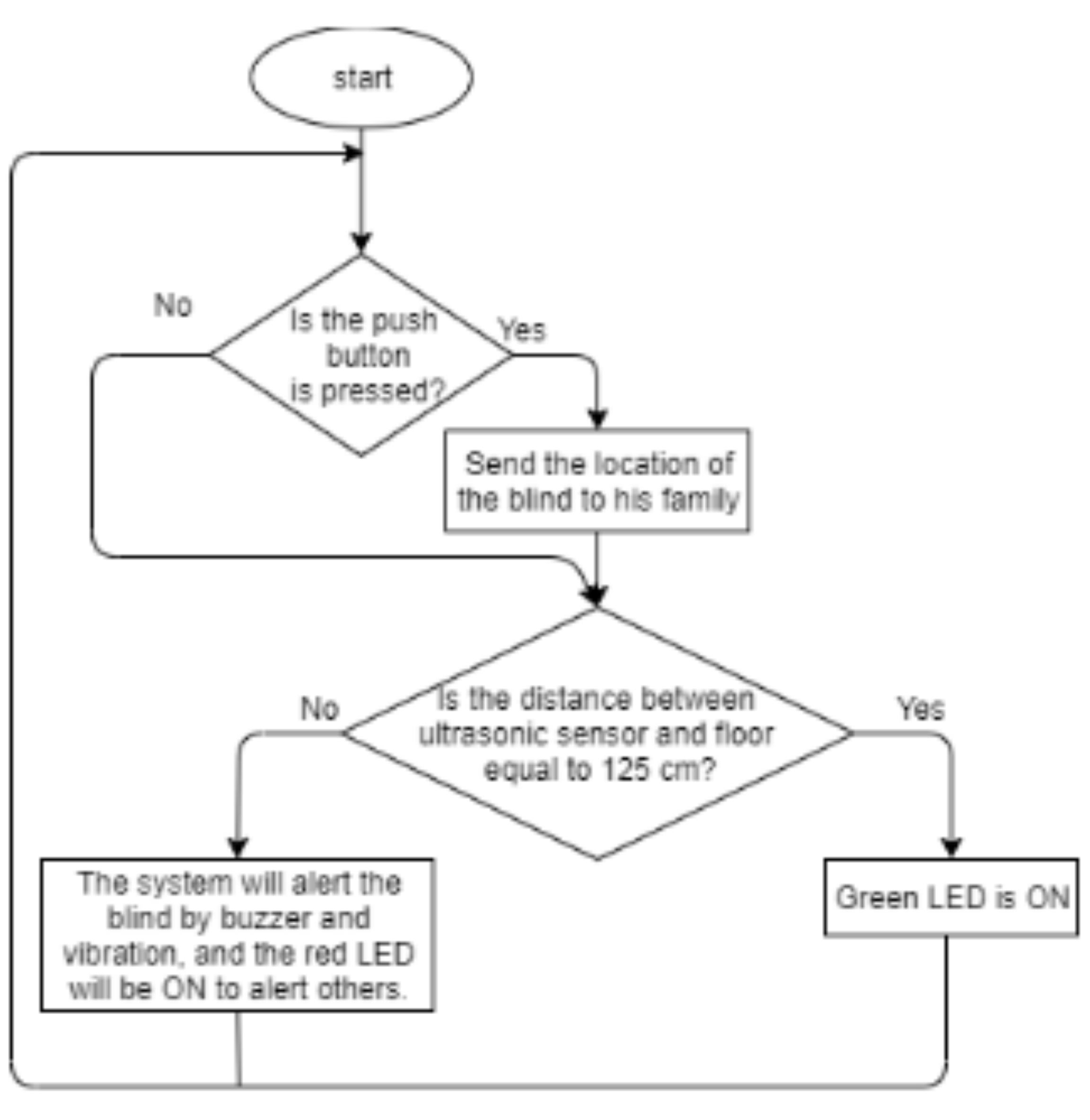
**Abstract:**

Blind people face difficulties in detecting obstacles and dangers on their way while walking or moving around, which may put them at risk. In this project, we propose a smart stick system that aims for guiding and assisting blind people and enable them to identify the world around them. The proposed system works to detect obstacles and staircases using an ultrasonic sensor. It alerts blind people by vibration and sound if any object detected on the way through a vibration motor and buzzer and others will know if they need help when the red LED is on. The system allows their families to track them easily anywhere anytime if they are lost via Global Positioning System (GPS). And for urgent, to communicate the blind person with his family, we added Global System for Mobile (GSM) so that if the person pressed a push button, a message will be sent to his family. We used solar power to ensure no power interruption and to use eco-friendly material. In our project, we seek to provide a smart stick that is capable of giving reassurance for blind people to move around alone without fear, a proper tool that's comfortable for them to use and affordable.

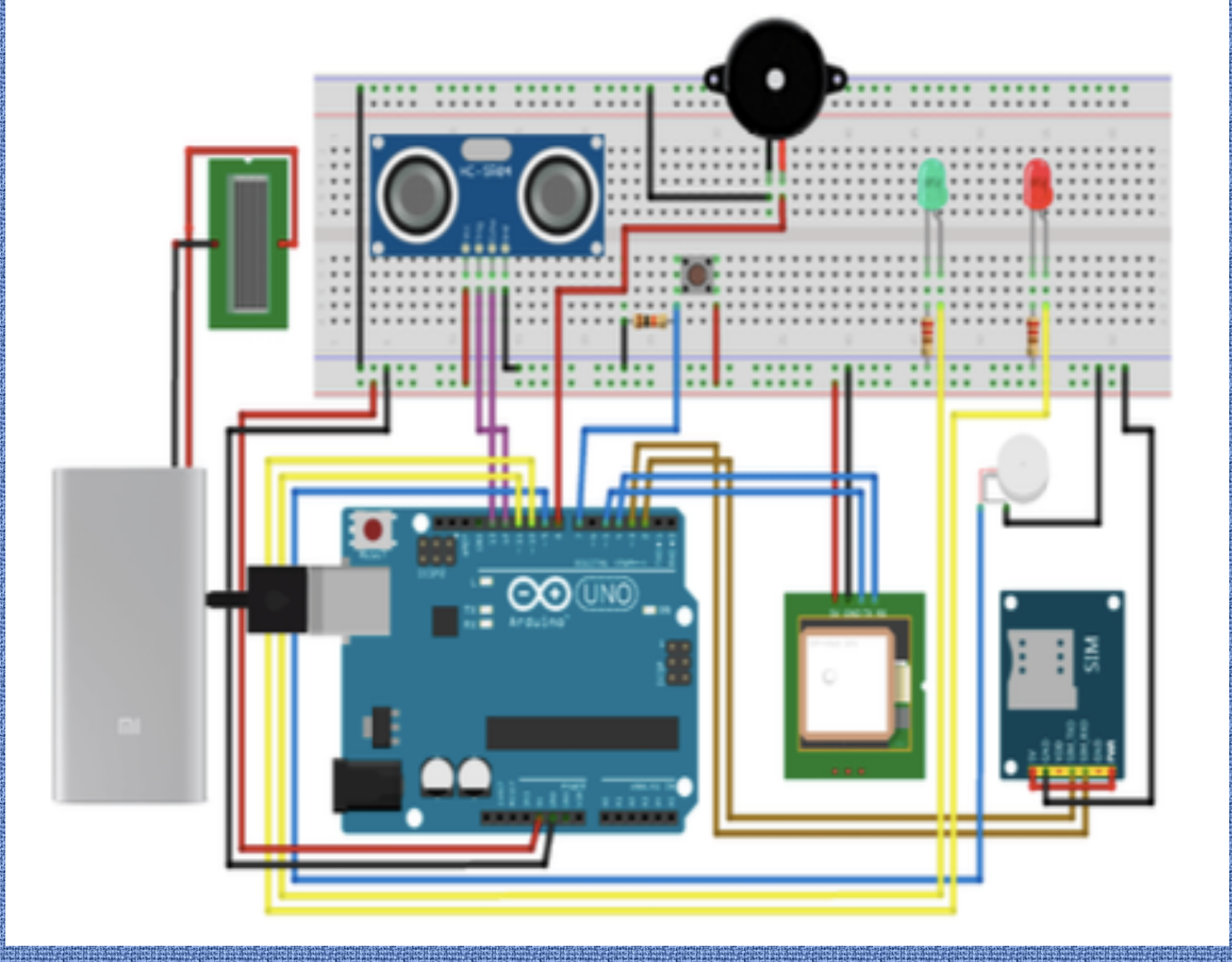
**Purpose of the Project**

To provide a solution for the blinds, who depend on the others on movement, we proposed a smart stick that can detect obstacles and dangers on their way to give them the reassurance to move around alone without fear.

**Data flow diagrams**



**Hardware diagram:**



**Methods:**

First, we made the blinking LED experiment to check if it works well or not, as shown in the figure below. as shown in figure 5.1  
 Second, we made an experiment of GPS module to understand its concept and to make sure that it works properly as required. The GPS sent the location successfully. as shown in figure 5.2  
 Third, we made an experiment with GSM and we sent a message to a mobile successfully as shown in figure 5.4 and 5.5.  
 Fourth, we connected the LED, push button and buzzer together, so the LED and the buzzer will turn on when the push button pressed. as shown in figure 5.6  
 Fifth, we connected the ultrasonic with LED together, so if any object gets close within its range which is 6 cm, the LED will turn on, otherwise the LED is turn off. as shown in figure 5.7  
 Sixth, we made an experiment to test the vibration motor and it worked properly. as shown in figure 5.8  
 Finally, we collected all the experiments together to make the final project, and it has worked successfully. The figures 5.9 and 5.10 show the final design of our smart blind stick.

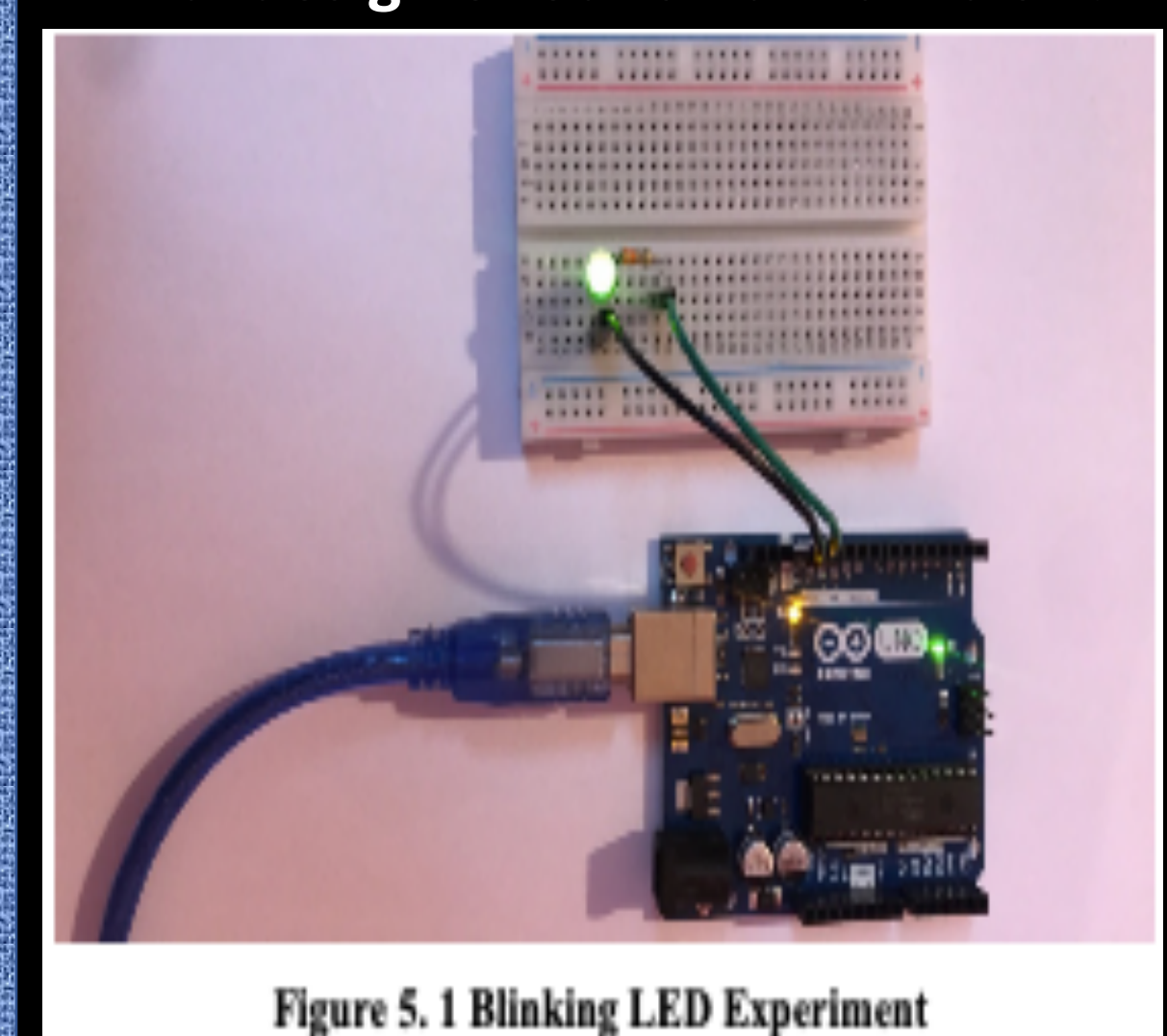


Figure 5.1 Blinking LED Experiment

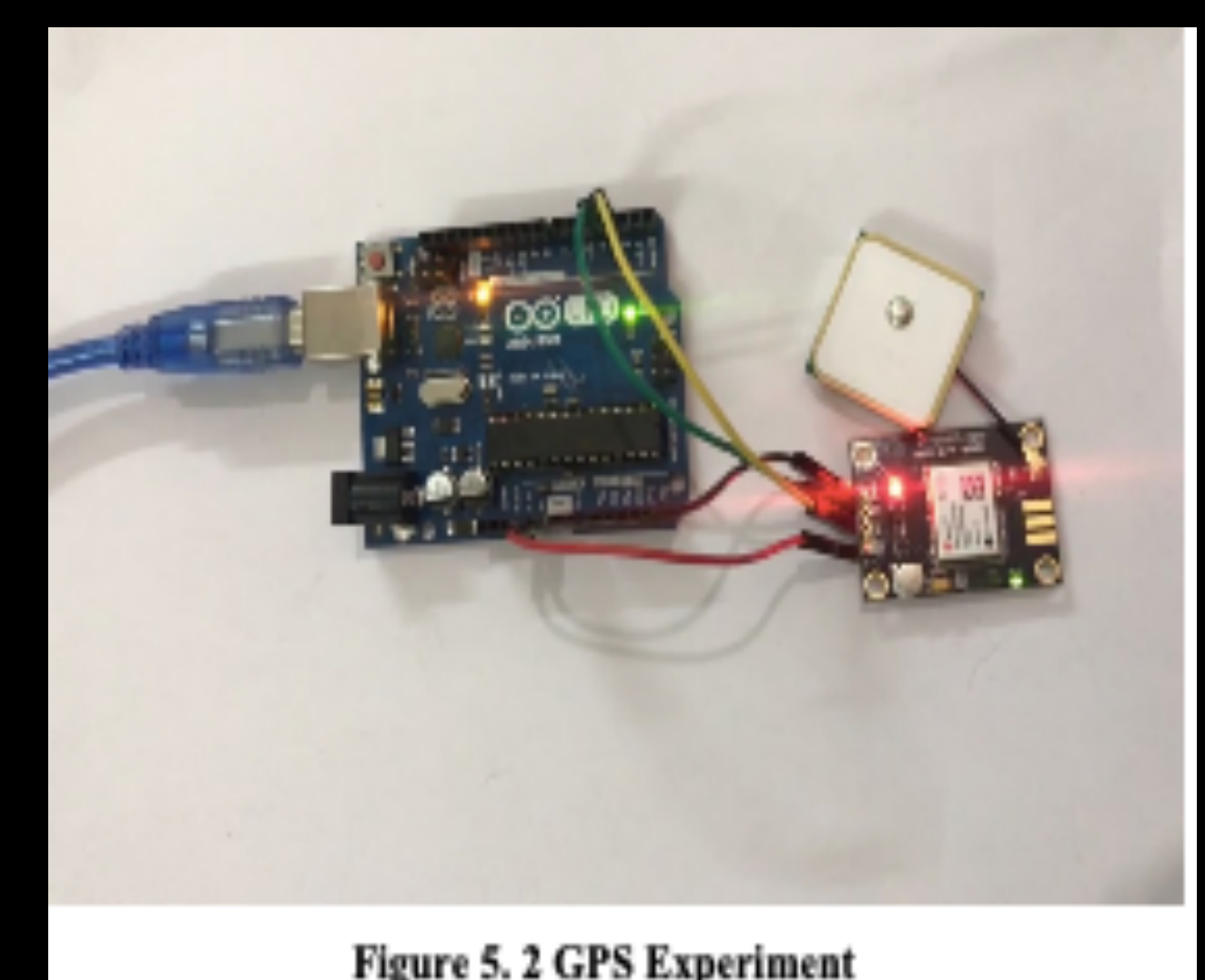


Figure 5.2 GPS Experiment

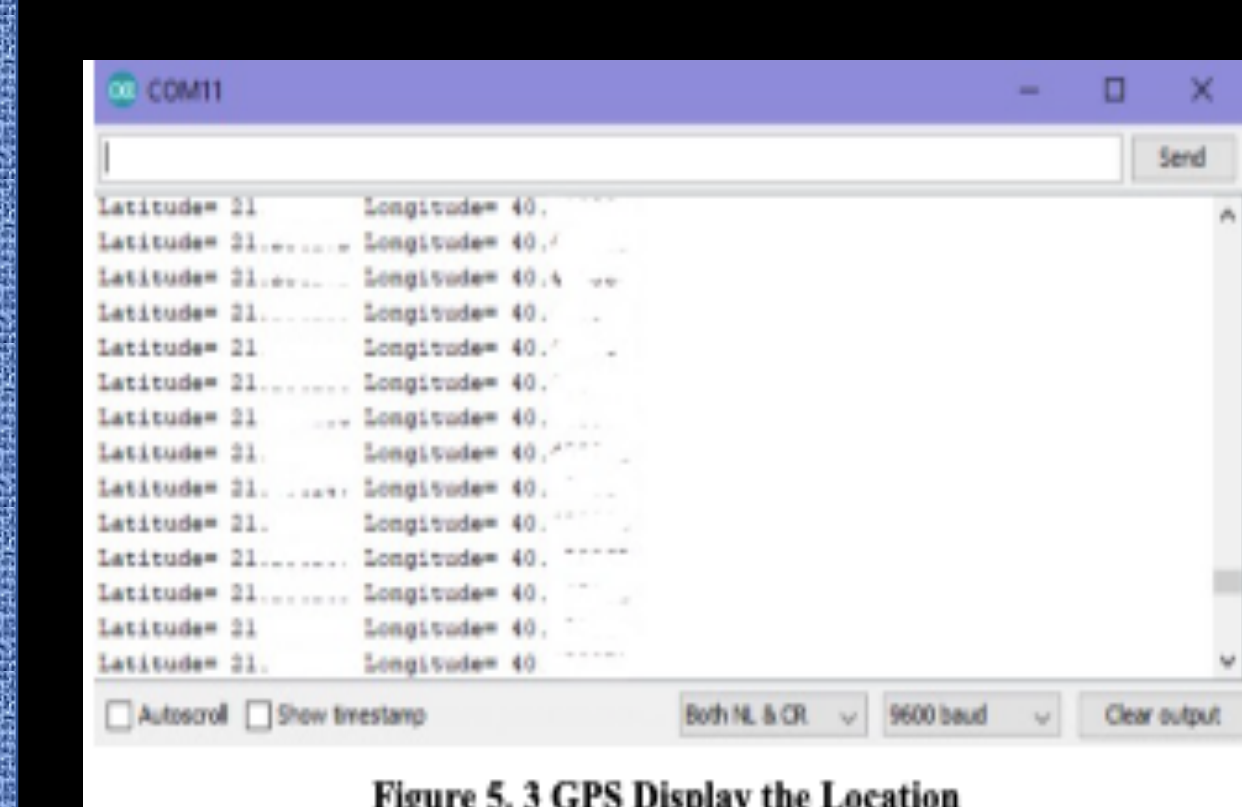


Figure 5.3 GPS Display the Location



Figure 5.4 GSM Experiment

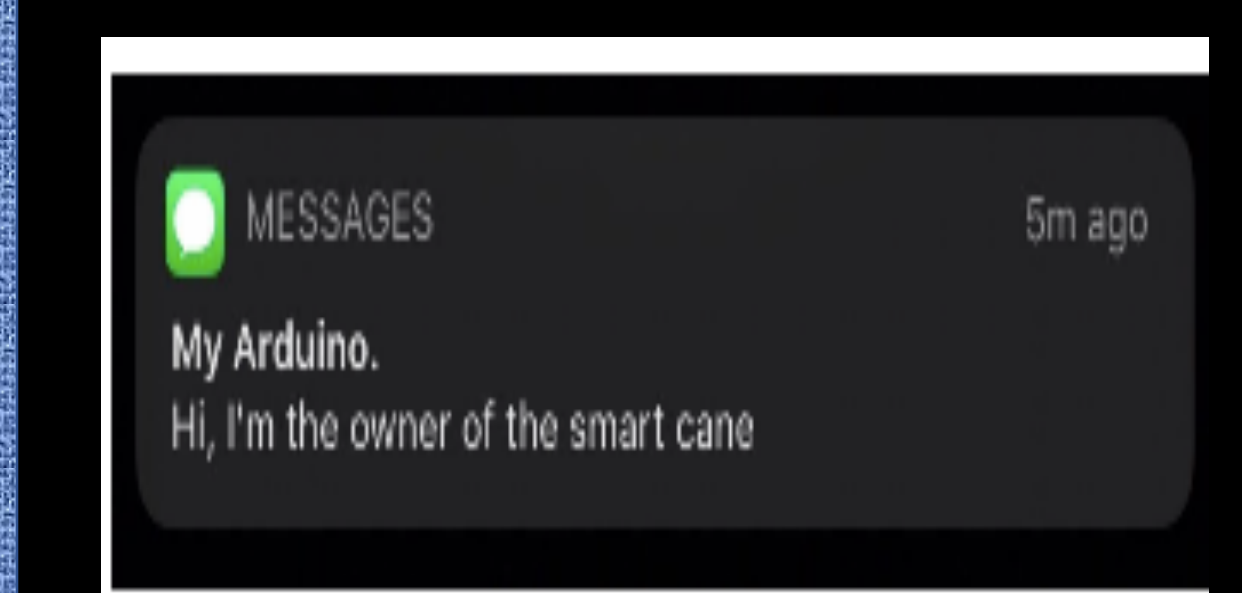


Figure 5.5 a Message Sent By GSM

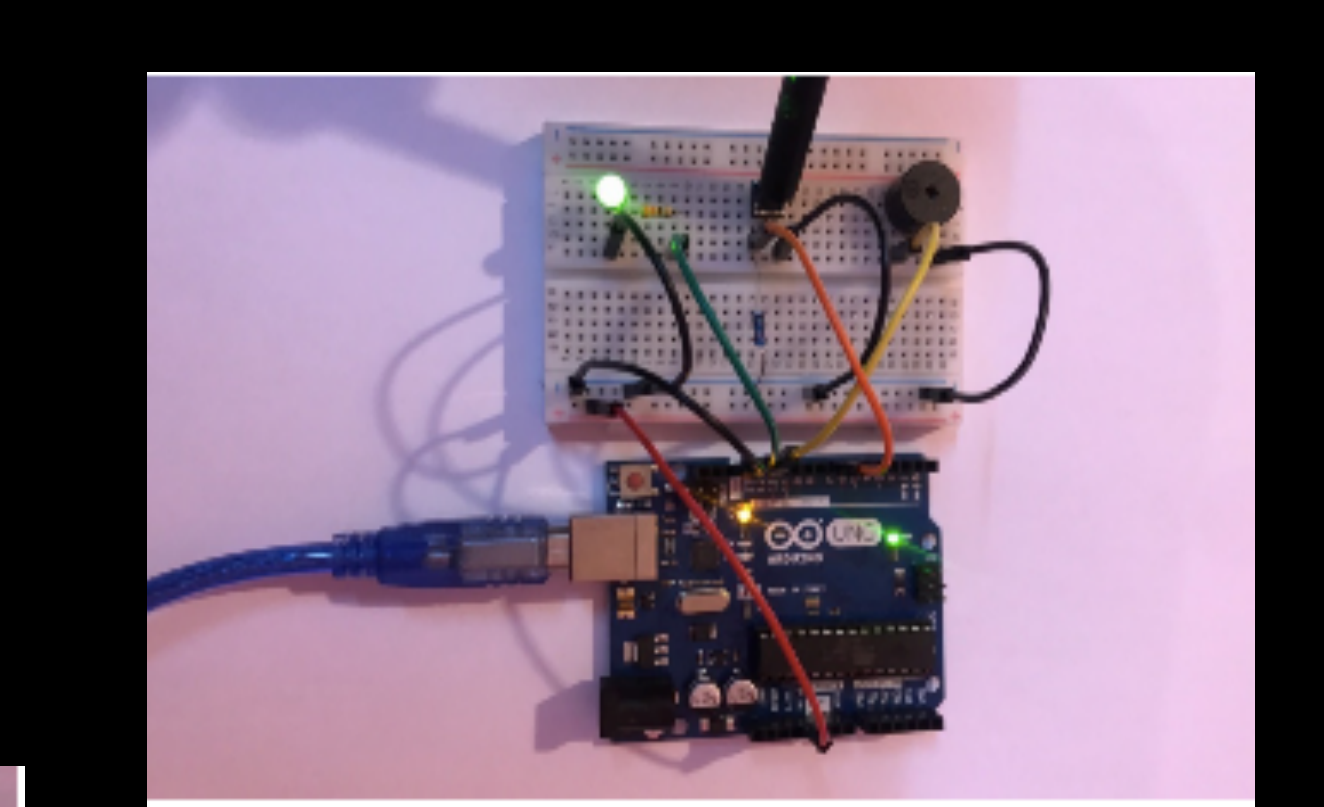


Figure 5.6 Push Button, Buzzer and LED Experiment

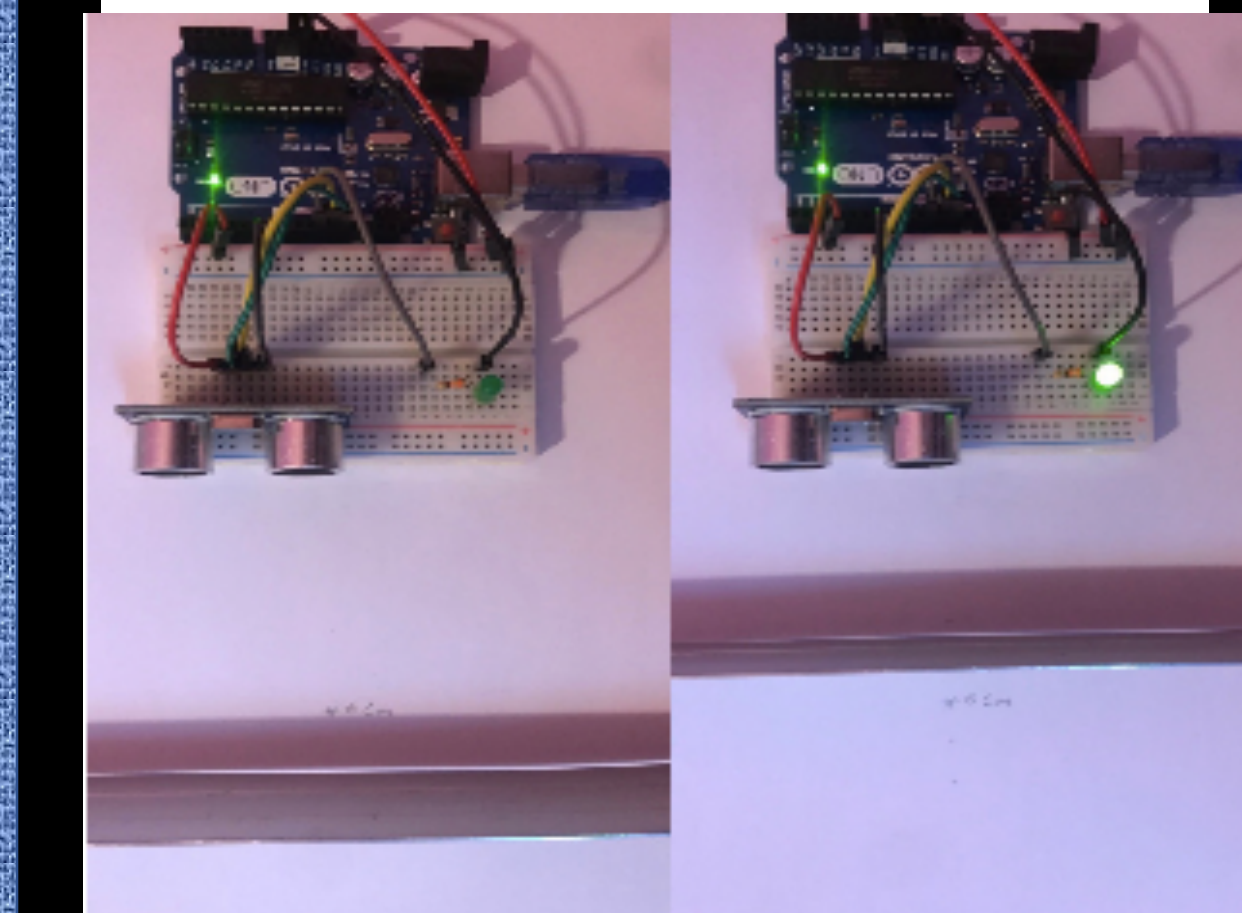


Figure 5.7 Ultrasonic Experiment

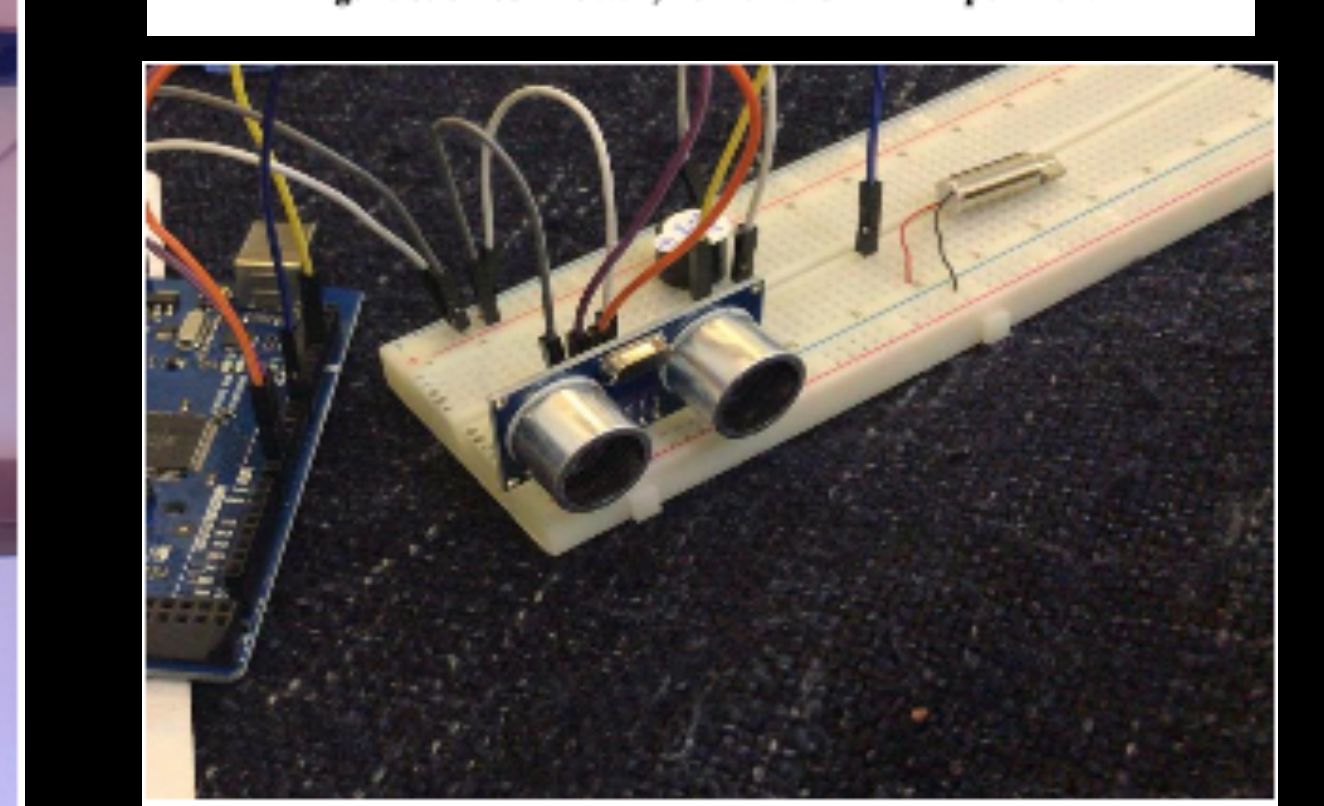


Figure 5.8 Vibration Motor Experiment

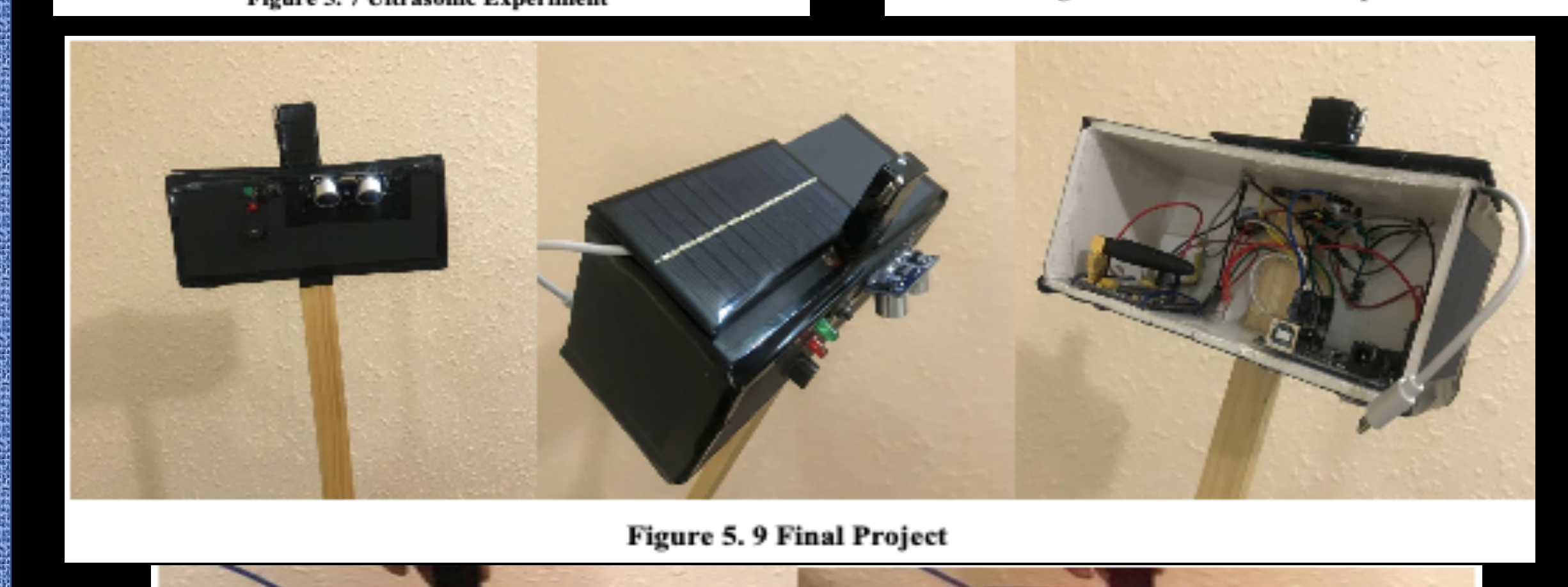


Figure 5.9 Final Project

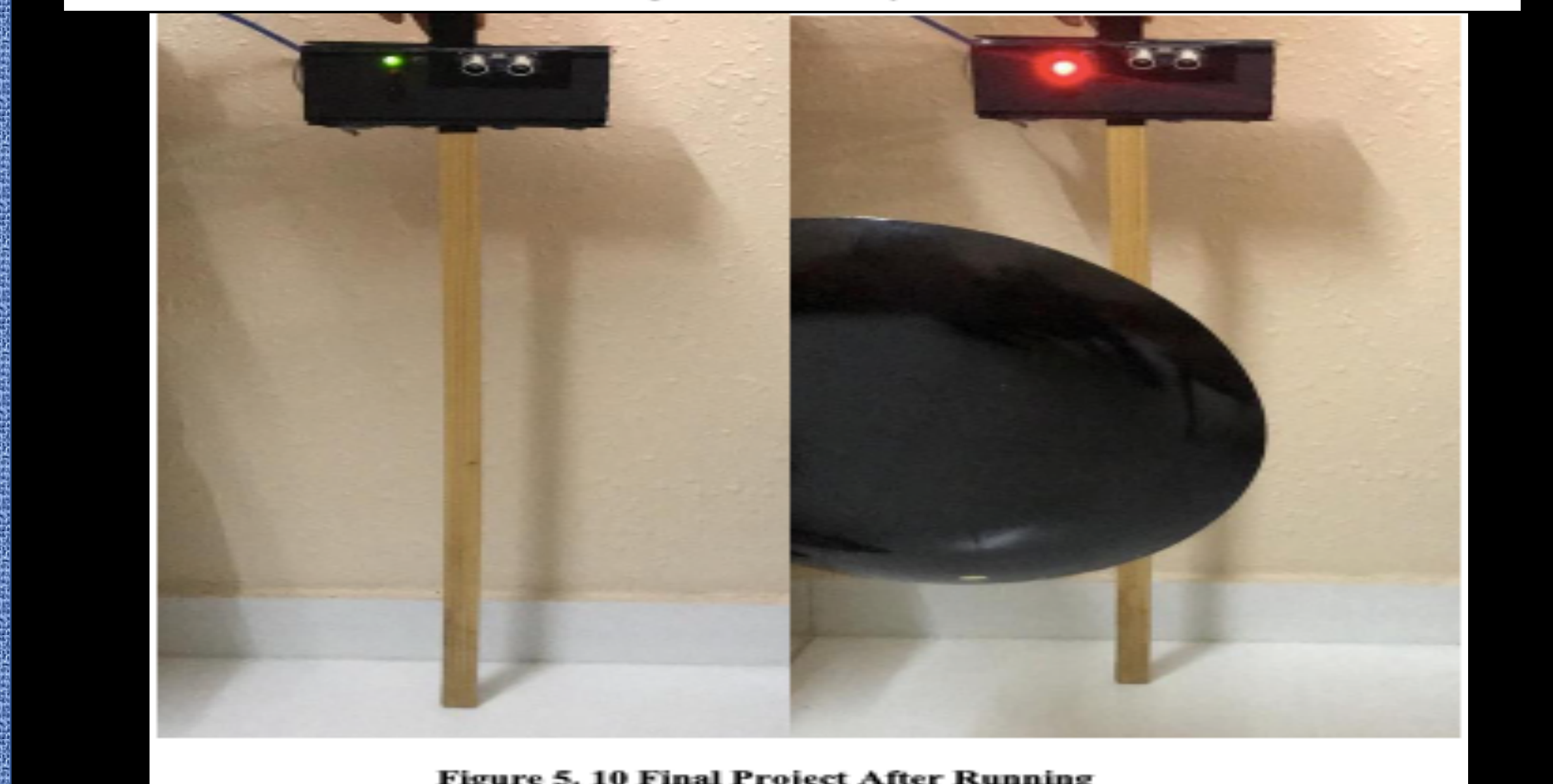


Figure 5.10 Final Project After Running

**Implementations and Conclusion**

In normal lives, the blind people face difficulty in walking individually, they are always need help and assistance from others to get to the places they want peacefully. Therefore, in our project, we proposed a system that can help the blind in their daily lives to walk in peace independently, without need for any help. We have succeeded in implementing the project's goals and objectives and designed a complete system capable of protecting the blind from any obstacles and danger might encounter them on the roads and designed back up components to connect them with their family and paramedics if they face any trouble.