

Multipurpose Smart Shoe for Various Communities

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Abstract

Compare A recent survey depicts that across the globe there are nearly 36 million visually impaired people facing serious issues in accessibility, education, navigating public spaces, safety concerns, and mental health. Now the evolutions of obstacle detectors for blind people have been from the usage of people, sticks, smart glasses, and smart shoes. Among the above, the major problem faced by all blind people is to walk independently to every place, so to make them feel independent while they walk, here is a proposal for an intelligent shoe. The proposed intelligent shoe consists of a controller connected with an ultrasonic sensor, voice alert system (VAS), vibration patterns, GPS navigation, connectivity with a smart-phone or smart-watch, voice assistance, feedback on gait and posture, and emergency features that are embedded with each other to communicate the presence of obstacles in the directions of the path of the blind. The sensor identifies an obstacle in the direction present then it passes the signal to the controller that activates the VAS and the vibration patterns present in that direction. Therefore, by the proposed concept of vibration sense and VAS with GPS navigation, connectivity with a smart phone or smart-watch makes the system easy access for the blind to identify the obstacle present on their way and make them social inclusion

1.Design of smart shoe

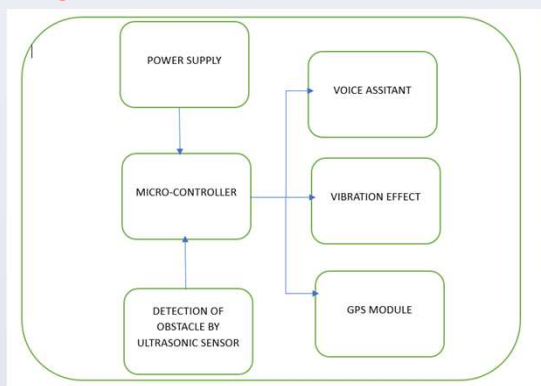


Fig. 1. Block Diagram

2. Simulation and Explanation

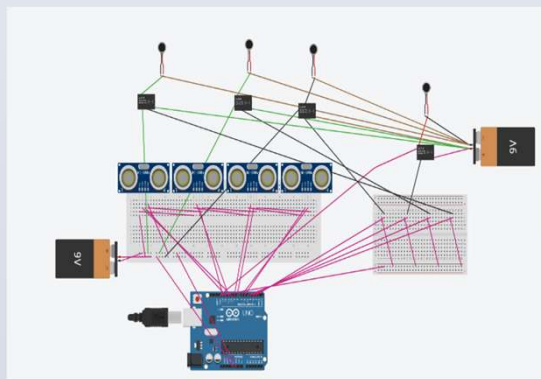


Fig. 2. Simulation in OFF state

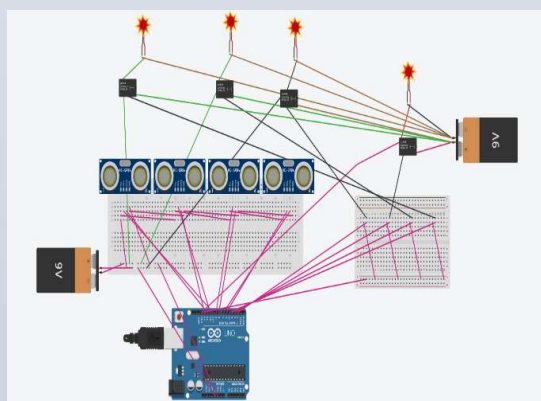


Fig. 3. Simulation in ON state

3. Hardware and Explanation

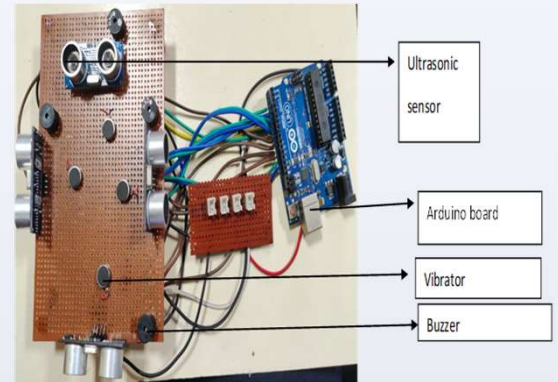


Fig. 4. Prototype model of smart shoe

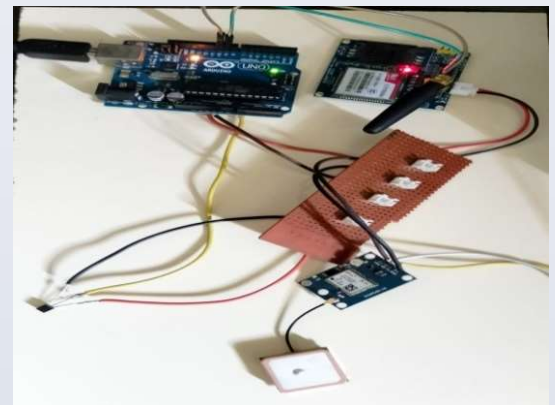


Fig. 5. GPS module



Fig. 6. Location status of the blind person

Conclusion

This paper presents the idea of smart shoe that helps the blind effectively as there are nearly 4 ultrasonic sensors combined with the vibrators and VAS which can predetermine the presence of object in all the directions when a blind walks in the road. Here there is a usage of both VAS and vibrators, because if the blind is also having earing-impairment then the vibrator's vibration is enough for him to detect the location of obstacle present. By the usage of GPS module, the blind can be protected from emergency situations.