Smart Glasses For Blinds

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Abstract

This paper presents a smart glasses system designed to help blind and visually impaired people move around more safely and independently. The glasses use a small sensor to detect obstacles, recognize objects, and understand the surroundings. The information is then given to the user through voice messages or sounds, allowing them to know what is around them without needing to see. The system is lightweight, easy to wear, and does not block the ears, so users can still hear the environment. Tests with users showed that the smart glasses helped them avoid obstacles and feel more confident while walking. This device can be a helpful and affordable tool to support daily life for people with vision loss.

1. Introduction

Visually impaired individuals often face challenges in navigating their surroundings safely and independently. Traditional aids like white canes have limitations in detecting obstacles at a distance or above ground level. With advancements in technology, smart glasses offer a new solution by combining sensors, cameras, and audio feedback to provide real-time guidance. This paper presents a smart glasses system designed to assist paper presents a smart glasses system designed to assist blind users by detecting obstacles and conveying environmental information through voice output, enhancing mobility and independence in daily life.
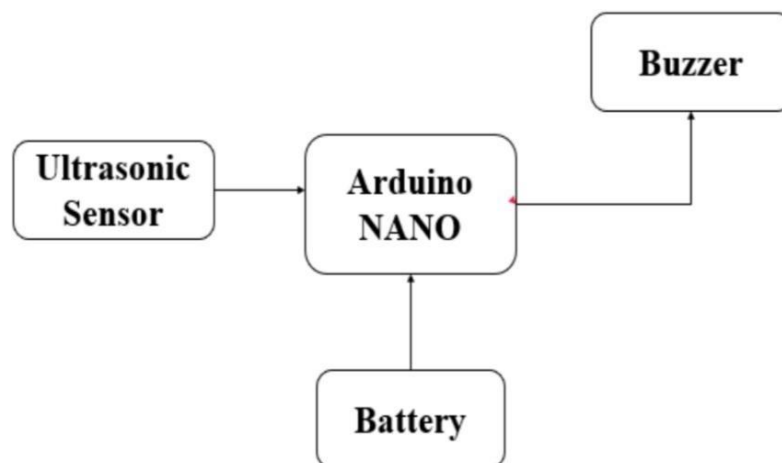
2. System Architecture

Fig.1: Block Diagram of Smart Glasses for Blinds.

2.1 Hardware

- Arduino Nano: Microcontroller to process and execute user commands.

- Battery : Converts AC to regulated DC affair.

- Sensors: For Input.

- Buzzer: For Output.

2.2 Software

- Arduino IDE with C/C++ code

2.3 Operation Flow

    a.   When the blind person can be start walking .

    b.   Ultrasonic sensor can be detect the object.

    c.   Ultrasonic sensor can be sends the input to the Arduino.

    d.   Then the Arduino can be gives the output to the Buzzer.

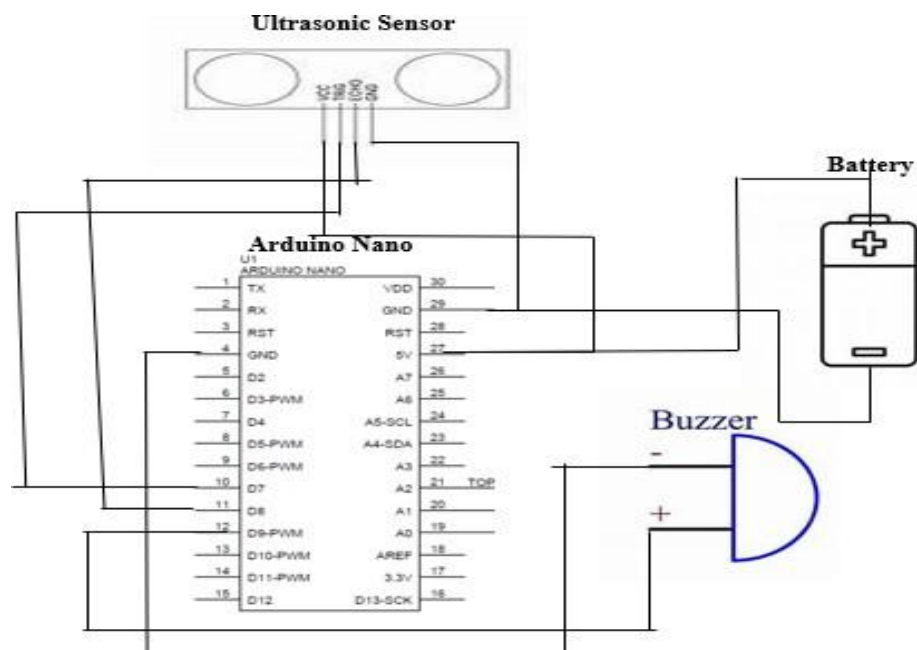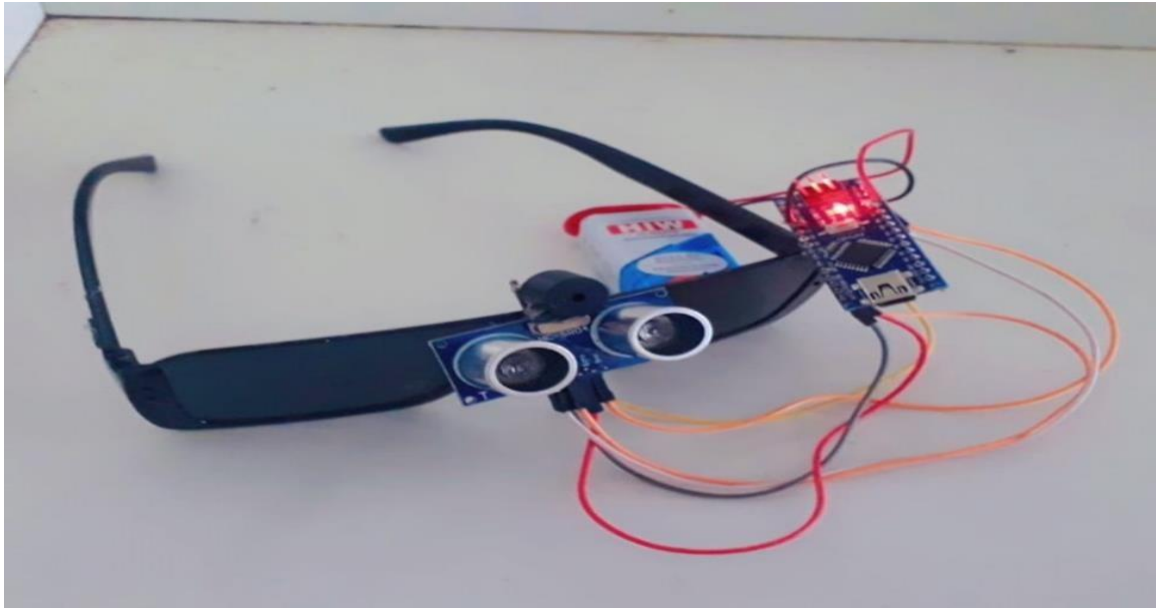   e.   When obstacle detects then the Buzzer can be start beeping.

3. Methodology

Fig.2: Circuit Diagram of Smart Glasses for Blinds.

4. **Results and Discussion**

- Experimental Setup: Demonstrated successful sensor can be detect the obstacles.

- Trustability: Low-cost and Energy saving , Lite weight.

5. **Conclusion**

- This device will help the blind person be more alert about the obstacles.

- This project is mainly for the blind people to avoid obstacles by themselves.

- This project provides efficient and an economical security system.

6. **Future Work**

- Can be make read and write.

- We can add GPS in this system.

7. **Conflict of Interest**

The authors declare that they have no conflict of interest.

8. **Funding Declaration**

9. **Reference**

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About Author

Swamini Dasharath Chavan is currently pursuing a Bachelor's Degree in Electronics and Telecommunication Engineering at Dr. Babasaheb Ambedkar Technological University. Her academic and research interests lie in the fields of automation; microcontrollers (Arduino, Raspberry Pi); sound signal detection and audio processing techniques; healthcare technologies; cybersecurity; and cloud computing.

Driven by a passion for innovation, she aims to design systems that enhance daily life and address common challenges faced by visually impaired individuals using smart technology. Her future aspirations include working in the domains of embedded systems, Internet of Things (IoT), and smart device development, particularly in healthcare and consumer electronics.