# TEEGALA KRISHNA REDDY ENGINEERING COLLEGE

(UGC-Autonomous)

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## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING


**BATCH NO:06**

# SMART SHOE FOR THE BLIND PEOPLE USING ULTRASONIC SENSOR AND VOICE GUIDANCE


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# OBJECTIVES

The goal of this initiative is to create smart shoe for blind people is to improve mobility and safety for visually impaired individuals.

- It uses ultrasonic sensors to detect obstacles in real time. The system provides voice guidance to alert users about nearby obstacles.
- This hands-free solution enhances independence and reduces reliance on traditional aids like canes. It aims to be an affordable and user-friendly assistive device.

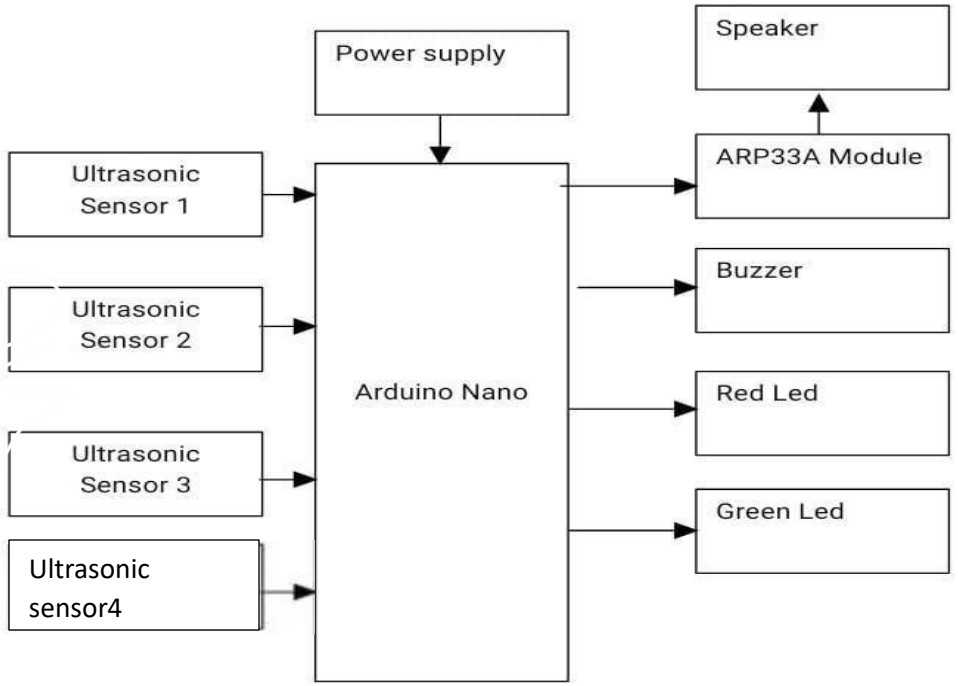
# ABSTRACT


- This project presents a Smart Shoe for Blind People, integrating ultrasonic sensors and voice guidance to enhance mobility and independence.
- The system employs ultrasonic sensors to detect obstacles in the user's path and provides real-time audio feedback via a voice module.
- The ultrasonic sensors continuously scan the surroundings, and when an obstacle is detected within a predefined range, a microcontroller processes the data and triggers voice alerts through a speaker
- This innovation aims to improve the safety and autonomy of visually impaired individuals, reducing their dependency on traditional aids like canes. The smart shoe is a cost-effective, lightweight, and user-friendly solution, making it a viable option for widespread adoption.



**Keywords:** Smart Shoe, Ultrasonic Sensor, Voice Guidance, Assistive Technology, Blind Navigation

# BLOCK DIAGRAM



# METHODOLOGY

- The smart shoe is designed to help visually impaired individuals navigate safely using ultrasonic sensors and voice guidance.
- Ultrasonic sensors are placed at the front and sides of the shoe to detect obstacles within a specific range.
- A microcontroller processes the sensor data and determines the distance of obstacles.
- When an obstacle is detected, a voice module or Bluetooth-connected earphones provide real-time audio alerts.
- The system is powered by a rechargeable battery to ensure continuous operation.
- A prototype is developed and tested in real-world conditions to evaluate its effectiveness.
- Feedback from visually impaired users is collected to optimize the system for better accuracy and usability.
- Future improvements may include GPS integration for advanced navigation and smartphone connectivity for additional features.

# Advantages and Applications

**Advantages:**

- Enhanced Mobility
- Hands-Free Operation
- RealTime Alerts
- Lightweight an Comfortable
- User-Friendly

**Applications:**

- Daily Navigation
- Public Transport Assistance
- Educational Institutions
- Hospitals and Rehabilitation Centers
- Smart Cities and Accessibility

# EXPECTED RESULT

# Thank you...