Smart Blind Assistance System Using Wearable Wrist Band

Vaishnavi Vidhyadhar Kulkarni, Anushka Shahaji Kale, Shweta Dhanraj Shinde,
Madhura Dnyaneshwar Ghuge, Sejal P. Lunawat

Department of Computer Engineering
Pimpri Chinchwad Polytechnic, Pune, India
kulvaisha.13@gmail.com, anushkakale228@gmail.com, shweta.shindepcpolytechnic2510@gmail.com
madhuraghuge94@gmail.com, sejallunawat01@gmail.com

Abstract: *Visually impaired individuals face significant challenges during independent navigation due to the inability to detect obstacles and identify their location. Traditional assistive tools such as white canes provide limited obstacle detection and do not offer location awareness. This paper presents a Smart Blind Assistance System using a wearable wrist band designed to provide real-time obstacle detection and location tracking. The proposed system uses one ultrasonic sensor mounted at the front to detect obstacles in the user's path. When an obstacle is detected within a predefined distance of one meter, an audio alert is generated using a buzzer. In addition, a GPS module is integrated to obtain real-time geographical location information, which can be used for navigation assistance and emergency support. The system is controlled using a microcontroller such as Arduino or ESP32-C3 and includes a push button to activate or deactivate the device. The complete system is compact, lightweight, cost-effective, and wearable like a wristwatch. This solution enhances safety, mobility, and independence for visually impaired users during daily navigation..*

Keywords: Blind assistance, Wearable device, Ultrasonic sensor, GPS module, Obstacle detection, Arduino, ESP32-C3, Assistive technology

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/IJARSCT-30837

200

ISSN
2581-9429
IJARSCT