

Lumora: Smart Assistive Wearable for Visually Impaired

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Abstract: *Ensuring accessibility, independence, and safety for visually impaired individuals is an important challenge in modern society. This paper presents Lumora, a smart assistive wearable device designed in the form of intelligent glasses. The system enhances environmental awareness by detecting obstacles and recognizing objects in real time.*

Visually impaired individuals often face difficulties in navigation, obstacle avoidance, and understanding their surroundings. The proposed system integrates a miniature camera, sensors, and a processing unit powered by Artificial Intelligence and Computer Vision.

The camera captures live environmental data, which is processed to identify obstacles and objects. The system then provides feedback using haptic vibration signals, allowing the user to receive immediate alerts without relying on visual cues. Lumora is designed to be compact, affordable, and user-friendly while improving mobility and personal safety.

In addition to obstacle detection, Lumora aims to promote greater independence and confidence in daily activities. By providing real-time environmental awareness, the device reduces reliance on constant human assistance and supports safer movement in both indoor and outdoor settings. Its wearable design ensures comfort and ease of use, making it suitable for continuous everyday application. Overall, Lumora represents a step toward inclusive technology that empowers visually impaired individuals to navigate their surroundings more securely and independently.

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