

Embedded System Based Eye Moment and Gesture Based Communication For Paralyzed

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Abstract: *Assistive technologies are crucial for improving the mobility and communication of paralyzed individuals. This paper presents an embedded system-based assistive device integrating gesture-based wheelchair control, environmental light monitoring, and an eye blink-triggered buzzer. The system employs an accelerometer to detect hand gestures for seamless wheelchair navigation, while an LDR monitors ambient light intensity for automatic lighting adjustments. Additionally, an eye blink sensor activates a buzzer, providing an emergency alert mechanism. The system is cost-effective, energy-efficient, and user-friendly, enhancing accessibility and independence for users. Experimental results demonstrate high accuracy in gesture recognition and reliable environmental light detection, ensuring efficient system performance. The buzzer activation through eye blink detection has been tested under various conditions, proving its effectiveness for emergency alerts. Compared to traditional assistive devices, this system offers improved accessibility, ease of use, and reduced complexity at a lower cost. Future enhancements include wireless communication for remote control, AI-based gesture recognition for improved accuracy, and integration with smart home automation systems. These improvements aim to make the system more scalable, adaptable, and beneficial for a wider range of users*

Keywords: Embedded system, gesture-based control, accelerometer, LDR, ambient light monitoring, eye blink sensor, buzzer alert, mobility aid, accessibility, smart automation, cost-effective solution, wire communication

