Patent Search

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Abstract:

The invention provides an electronic assistance system for paralyzed individuals using an infrared-based eye-blink detection mechanism integrated with a microcontroller. eye-blink sensor detects intentional eyelid closures, which are processed and classified into predefined blink patterns. A single blink controls electrical appliances through module, a double blink triggers an automated emergency alert via a communication interface, and a triple blink activates prerecorded audio messages for essential communication. The system differentiates involuntary blinks from intentional ones using duration and sequence analysis, enabling reliable hands-free operation. The inve offers a low-cost, real-time, and user-friendly assistive solution that enhances independence and safety for individuals with severe motor impairments.

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates generally to the domains of biomedical electronics, assistive technologies, embedded control systems, and human–machine interacti frameworks. More particularly, the invention pertains to an eye-blink based electronic assistance system designed to facilitate interaction with electrical or electronic appliances by individuals suffering from paralysis, quadriplegia, motor-neuron impairment, or any medical condition that restricts voluntary limb movement. The inventi further encompasses technologies for real-time physiological signal acquisition, blink-pattern classification, adaptive decision-making, and activation of external control modules, thereby providing a hands-free and non-verbal assistive interface for daily living, safety, and communication.

BACKGROUND OF THE INVENTION

[002] Paralysis, whether partial or complete, severely restricts a person's ability to perform routine tasks that require voluntary muscular movement. Individuals suffering from conditions such as spinal cord injury, cerebral palsy, quadriplegia, motor neuron diseases, or age-related neuromuscular degeneration often lose the functional capability to operate switches, interact with household appliances, or communicate without external assistance. While various assistive technologies have emerged in re years, a substantial gap continues to exist between the needs of such patients and the functionality, cost, and accessibility of available solutions.

View Application Status

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