पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 1/2025	शुक्रवार	दिनांक: 03/01/2025
ISSUE NO. 1/2025	FRIDAY	DATE: 03/01/2025

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :21/12/2024

(21) Application No.202411101646 A
(43) Publication Date : 03/01/2025

(54) Title of the invention : AN ADVANCED EYE BLINK COMMUNICATION SYSTEM FOR PARALYZED PATIENT

(51) International classification :A61B0005000000, A61B0005398000, G08B0007060000, G06N0020000000, G06Q0030060100
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The present invention relates to an advanced eye blink communication system designed to facilitate seamless interaction for paralyzed patients. This system employs precise detection of intentional eye blinks using infrared (IR) or electrooculography (EOG) sensors, converting these signals into digital inputs for analysis by a machine learning-based processing unit. The system enables real-time communication through a customizable user interface that can display information in text, audio, or visual formats. It incorporates adaptive learning capabilities to accommodate unique user patterns, providing personalized support for varied communication needs. Furthermore, the system integrates with smart home devices, allowing for broader control of electronic systems, and offers emergency alert functionalities to enhance user safety. Feedback mechanisms deliver immediate confirmation of successful actions, improving user experience. Designed to be portable and user-friendly, the system minimizes physical and cognitive load, making it accessible to individuals with severe motor impairments.

Through these features, the invention significantly improves the quality of life for paralyzed patients by enabling effective and intuitive communication.

No. of Pages : 11 No. of Claims : 10