IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 3, June 2025
Impact Factor: 7.67

Smart Paralysis Rehabilitation System

Prof. H. P. Pathade[1], Rahane Tanuja Goraksh[2], Takate Pragati Jagdish[3], Sonawane Pooja Sitaram[4], Sangale Shirish Baban[5]

[1]Assistant Professor, Department of Automation and Robotic Engineering [2,3,4,5]
Student, Department of Automation and Robotic Engineering
[1,2,3,4,5]Amrutvahini College of Engineering Sangamner

Abstract: *The Smart Paralysis Rehabilitation System is an innovative, sensor-based therapeutic solution designed to support and enhance the recovery process of paralyzed patients through monitored physical exercises. Integrating key components such as IR sensors on a hand wheel and pedal mechanism, a pulse sensor within a control box, an Arduino Nano microcontroller, and a 16x4 LCD display, the system offers real-time tracking of limb movements and vital signs. The IR sensors detect and record upper and lower limb activity, while the pulse sensor continuously monitors the patient's heart rate to ensure safe levels of exertion during therapy sessions. All data is processed by the Arduino Nano, which controls system logic and displays session progress, pulse rate, and movement counts on the LCD screen. This feedback allows for better patient engagement, therapist assessment, and ensures that exercises are performed within medically safe limits. By combining mechanical rehabilitation techniques with smart monitoring, the system bridges the gap between traditional therapy and modern health technology, offering a cost-effective, customizable, and user-friendly tool for both clinical and home-based rehabilitation environments*

Keywords: *Paralysis rehabilitation, IR sensor, Pulse monitoring, Arduino Nano, Smart therapy system*

DOI: 10.48175/568