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

Human Emulated Robotic Hand

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Abstract: *The integration of advanced technologies in robotics has propelled the development of innovative solutions aimed at enhancing human-machine interaction and efficiency in various domains. The system comprises the made from scratch flex sensors, incorporated into the glove, detect and translate human hand gestures into electrical signals, enabling real-time interaction with the robotic hand. Through meticulous calibration and programming, servo motors replicate the movements detected by the flex sensors, allowing the robotic hand to emulate human-like dexterity and flexibility. The Arduino Uno board serves as the central control unit, facilitating seamless communication between the sensors, motors, and external devices. Furthermore, this project leverages the Microsoft Excel Data Streamer feature to visualize the data acquired from the flex sensors in real-time. By streaming sensor data directly into Excel, users can monitor and analyse hand movements, fostering a deeper understanding of the system's functionality and performance. Additionally, the project extends its utility by integrating a gaming application into the system, exemplified by a virtual rendition of the classic game, Rock-Paper-Scissors. From assisting individuals with physical disabilities to enhancing efficiency in manufacturing and healthcare sectors, the versatility and adaptability of this technology position it as a crucial asset in addressing contemporary challenges.*

Keywords: Arduino Uno, Data visualization, Flex sensors, Human-emulated robotic hand, Microsoft Excel Data Streamer

DOI: 10.48175/IJARSCT-23979