A Short Technical Report towards A7024 – PR (P) Course

MECHANICAL HELPER HAND

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for the Award of the Degree of

BACHELOR OF TECHNOLOGY

IN

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Submitted

By

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CERTIFICATE

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Abstract

The mechanical helper hand is an innovative assistive device designed to provide support and enhance the independence of elderly and specially-abled individuals in performing daily tasks. This concept introduces a robotic hand equipped with two distinct actuators, enabling both vertical and horizontal movements. The hand's versatile design offers a seamless and intuitive interface, catering to a wide range of users with varying physical abilities. The primary objective of the mechanical helper hand is to aid individuals with limited dexterity, strength, or mobility, allowing them to carry out essential activities, such as lifting lightweight items, and performing basic tasks without external assistance. The device promotes ease of use and comfort, ensuring prolonged user engagement.

The first actuator facilitates vertical movement, allowing the hand to lift or lower its position based on the user's requirements. This feature is particularly beneficial for reaching objects at different heights, such as picking up items from shelves or placing objects on elevated surfaces.

The second actuator is responsible for horizontal movement, enabling the hand to move forward and backward in a controlled manner. This functionality further enhances the device's flexibility, permitting users to extend their reach and access objects within a broader range without having to overstretch or exert excessive effort.

The mechanical helper hand can be customized to meet individual preferences and limitations, making it a personalized assistive tool. It finds applications in homes, healthcare facilities, and assisted living centers, promoting autonomy and reducing dependence on external aid. By providing a means for greater independence and ease in performing daily activities, this mechanical helper hand has the potential to significantly improve the quality of life for elderly and specially abled individuals, empowering them to lead more fulfilling lives.

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ABBREVATIONS

Abbreviation	Expansion
CAD	Computer Aided Design
ESP32	Expressif Systems

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