

Analysis of grasping mechanism for random regular object of improved prosthetic robotic arm

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ABSTRACT

This paper presents the analysis of grasping mechanism for random regular object of improved prosthetic robotic arm. The prosthetic robotic arm is intended to assist in increasing movement, managing everyday activities, and promoting independence for financially disadvantaged individuals. The device utilizes 3D printing technology to make it more affordable than current market options. The prosthetic arm is controlled by a compact microcontroller (ESP32) and a force sensor that detects muscle flex activity, allowing for precise object grasping. The ability to grasp objects is crucial for disabled children to improve their quality of life and maintain independence, which is why the development of a prosthetic robotic arm with grasping capabilities is essential. The results of testing show that the prosthetic arm can successfully grasp regular shape objects. The goal of this study is to analysis the grasping on random regular objects, create an affordable, user-friendly prosthetic robotic arm that can improve the quality of life for disabled children. In conclusion, the results of this study suggest that a prosthetic robotic arm can successfully be used by children with limb disabilities.

KEYWORDS

3D design; 3D printing; Prosthetic robotic arm; Regular shape object grasping; Grasping force

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