

ABSTRACT

This project presents the design and development of a bio-mechatronic prosthetic hand aimed to enhancing functionality, comfort, and natural movement for users. Integrating principles of biomechanics, robotics, and biofeedback systems, the prosthetic hand is engineered to closely mimic the dexterity and adaptability of the human hand. Key aspects of the design include anatomical compatibility, sensory feedback mechanisms, and intuitive control interfaces. Through a actuation mechanisms, and sensor technologies, the prosthetic hand offers users enhanced capabilities for everyday tasks and activities. It is designed to user-centric principles to ensure usability, comfort, and acceptance. The Project works with help of Components like EMG Sensor which is used to sense muscle movement of hand, servo motor is used to control the movement of finger and Arduino Nano is used to control the Servo Motor according to signal from the EMG Sensor. The Project ultimately aim to enhancing the quality of life for individuals with upper limb differences.

Keywords: Bio-mechatronic, biomechanics, anatomical compatibility, ensure usability, comfort.