

Title: Human-Machine Interface System for Prosthetic Device

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KEYWORDS: Human-machine Interface, prosthetic, Lower Limb, Non-Invasive, Amputation

DOMAIN: Sensors

SUMMARY:

The disclosed invention is a human-machine interface (HMI) system for prosthetic control. The incorporation of the HMI system in a prosthetic arm mold overcomes the existing limb disabilities and replicates near-human-like movements. The non-invasive sensing system of the HMI consists of pressure and touch sensors that receive signals from the muscles of the amputated. The control mold and the motor unit cooperate in the finger movement and bionic arm in different directions based on the signal received from the microcontroller.

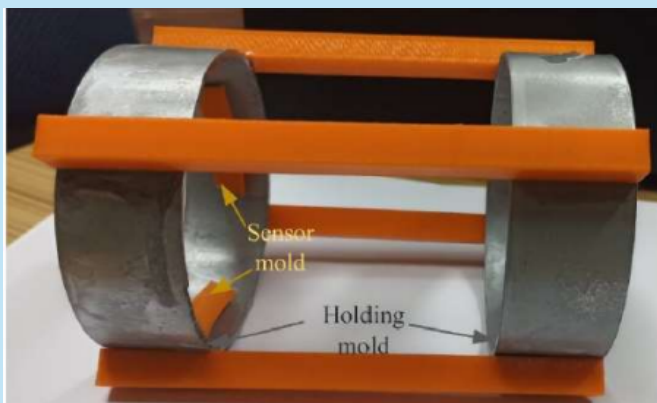


Figure 1: Fabricated prototype of the HMI system, labelling the sensor and holding mold

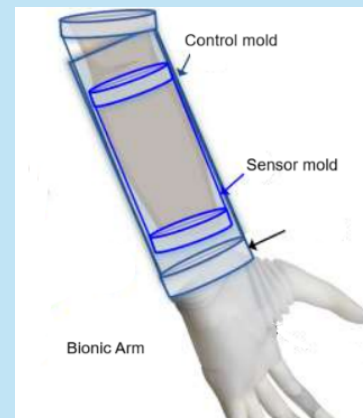


Figure 2: HMI system for Prosthetic Control

ADVANTAGES:

1. The improved mechanism of the HMI system facilitates near-human-like movements.
2. Enhanced the sound-to-noise ratio of the sensor mold.

APPLICATION:

1. Prosthetic Device

SCALE OF DEVELOPMENT: A functional prototype of the device is available and experimental testings are performed at the lab level.

TECHNOLOGY READINESS LEVEL: TRL 4

IP STATUS: Indian Patent Application No. 202211031501