

Wearable devices, wearable robotic devices, gloves, and systems, methods, and computer program products interacting with the same

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Technology description

PAGE SUMMARY

Wearable exoskeletal technology remains a challenging task despite advances in sensing, actuation, and fabrication techniques. It can be used in the military for strength augmentation, the medical field for rehabilitation, and commercially for gaming and human computer interaction. The hand provides a unique platform for this technology because of its anatomical complexity. Previous research in hand exoskeleton interfaces utilize bulky actuation methods and require range-limiting tethers to a computer and or power source. These technologies are both uncomfortable and impractical for extended everyday use. This has prevented similar technologies from successfully reaching the commercial, academic and medical fields. A team of Drexel researchers has developed an untethered soft exoskeletal system that is not bound by these constraints. Using computer controlled knitting technology and novel on-arm tendon actuation methods, they are able to fabricate devices in a manner that is both customizable and mass-producible.

Application area

A touch-interface for human computer interaction

An assistive device for strength augmentation and amplification

A device that enables customized in-home rehabilitative exercise and 24/7 monitoring

A master or slave device for teleoperation

Advantages

Offers an elegant “soft” solution to current bulky and cumbersome exoskeleton technologies

Cost effective manufacturing process allows the device to be both customizable and ready for mass production

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