Pneumatic Electromyographic Exoskeleton

Maddry, Conor

The objective of the project was to create a full body exoskeleton that would increase the strength of the user though implementation of electromyographic sensors and pneumatic actuators. The exoskeleton can provide significant enhancement in the user's ability to lift heavy objects, along with facilitating the rehabilitation of disabled people. The exoskeleton has an aluminum frame coupled with pneumatic actuators at all major joints of the body. The pneumatics are triggered by electromyographic sensors that detect minuscule electrical impulses corresponding to the user's muscle contractions. A microcontroller is used to process the electromyographic sensor outputs and drives the corresponding pneumatic valve. The system therefore mimics the user's muscle contractions and amplifies them.

Awards Won: