Winter Project Proposal Draft: Exoskeleton Robot Arm.

Weilin Ma, Jan 9th, 2018

This is another idea of my winter project proposal. I want to build a 1-dof exoskeleton robot arm that helps lifting up heavy things. Ideally this robot arm can be both wearable and can function individually.

- This exoskeleton robot arm will feature two links. They will be assembled by me from some pre-machined components (eg. from 80/20 Inc. , McMaster Carr).
- Muscle sensors will be used to attach to the biceps. Signals will be fed back to a Arduino Uno microprocessor.
- Then the microprocessor will feed to motor controllers (eg. from Pololu). The a linear actuator will be activated in place of the biceps.
- This system shouldn't be too hard to manufacture and to assemble. The hardest part might be how to map the scale of the muscle sensor values to the range of the linear actuator force. Otherwise, the exoskeleton might apply inappropriate forces.

This is an alternate idea of my winter project. If everything went too well and I actually have a lot of time left, I might go ahead to continue adding the shoulder joint.