Medical Xpress

Helping hands

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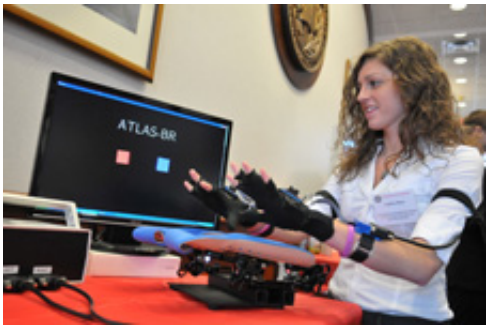

Undergrad researcher Caitlyn Bintz tries on stroke rehab glove. Photo by Craig Bailey

(PhysOrg.com) -- In capstone project, mechanical engineering students apply innovative and collaborative skills to create a rehab glove that stroke patients can use at home

Twelve groups of inventive seniors in mechanical engineering at Northeastern showed the best of their creative work last week, in an annual presentation of senior capstone projects that highlight creative innovations.

Among the most interesting? Hands down, it was the glove.

A team of undergraduates developed a glove designed to help stroke patients regain fine motor skills in their hands, formally known as the Angle Tracking and Location at Home System (ATLAS) bimanual

rehabilitation glove.

Professor of Mechanical and Industrial Engineering Constantinos Mavroidis, Associate Professor of Physical Therapy Maureen Holden and doctoral student Mark Sivak advised the team on their project. The project sought to offer real-world solutions to a rehabilitation challenge, and did so by combining the knowledge and talents of physical therapists and engineers, said Holden.

“In this project we were trying to develop a low-cost virtual-environment based glove system that can be used for motor retraining of the arm, hand, fingers and thumb in patients who have suffered a stroke,” Holden said. “The idea … is to keep the cost low enough and the features simple enough that patients can afford to buy one and use it independently in their homes.”

Sivak noted that stroke patients often couldn’t continue with physical therapy, either because they can’t drive to the location or it’s too expensive. “With the glove, the idea is to create an affordable, at-home mechanism to help them regain fine motor skills.”

It works through a series of sensors to provide resistance in hand exercises. The glove is wired to a computer, which displays virtual reality games that sync to hand exercises, Sivak said, explaining that the games add an element of fun to the therapy.

The students on the project team included Jason Chrisos, Caitlyn Bintz, Drew Lentz, Andrew Clark and Avi Bajpai.

Mavroidis, director of the Biomedical Mechatronics Laboratory at Northeastern, said that the annual capstone demonstration is a vital culmination of the undergraduate mechanical engineering program, and a great opportunity for engineering students to interact with one another

and across disciplines in the name of innovation.

Provided by Northeastern University

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