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[New Robotic Exoskeleton to Amplify the Wearer's Arm Strength](#)

Prototype looks promising



Jacob Rosen with his exoskeleton prototype UCSC

If a few years ago it might have seemed like a daring dream, today, robotic exoskeletons are more and more attractive to scientists, who constantly come up with new prototypes and. The latest to fall in that category, the engineers at the University of California, Santa Cruz, built a prototype robotic exoskeleton to amplify the strength of the wearer's arms.

"People with muscular dystrophy and other neuromuscular disabilities could use the exoskeleton to amplify their muscle strength, and it could also be used for rehabilitation and physical therapy," said Jacob Rosen, an associate professor of computer engineering in the Jack Baskin School of Engineering at the University of California, Santa Cruz. "One of the major challenges in this field is to establish an effective human-machine interface, or 'bio-port,' between the operator and the wearable robot, such that the robot becomes a natural extension of the human body," he said. "This bio-port may be established at the neural level, allowing the human brain to control the wearable robot with the same type of signals that it uses to control its own actuators, the muscles." Rosen's prototype consists of two wearable robotic arms, mounted on one wall of his UCSC laboratory. Two innovations distinguish Rosen's prototype from other exoskeleton designs. One is a special design of the exoskeleton arms that allows the user to reach 95 percent of the natural range of motion, or "workspace," of the human arm. The other, which is still the subject of active research, is a method for using neurological signals to control the exoskeleton. Some potential applications of the exoskeleton would not necessarily require the neuromuscular control system. For physical therapy, for example, the exoskeleton could be programmed to help a patient perform predetermined movements. This project still needs some work though, so, there's no info on its future availability.

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