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Robotic Legs May Make Difficult Tasks Easier

March 24, 2004

Two new robotic exoskeletons intended to help everyone from the elderly to the military are in the works, promising to give wearers greater physical abilities and reduce the potential for injury.



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The first suit, deemed HAL-3 for Hybrid Adaptive Leg, aims to permit physically disabled and aging wearers to maneuver stairs and chairs easily. Powered by a computer, batteries and four actuators attached at the knees and hip joints, HAL-3 uses various sensors to assist with the intended movement of the wearer by picking up faint electrical signals sent from the wearer's muscles. It ultimately will allow a wearer to perform tasks like walking at a rapid pace (4 km per hour) with little physical exertion.

"This is neither a robot in machine factories nor one for amusement like a pet robot. This is a brand new proposal projecting a future image of relations between people and robots," the suit's developer, Yoshiyuki Sankai, a professor at Tsukuba University in Japan, told *Agence France-Presse* in 2003.

The second suit, BLEEX, which stands for the Berkeley Lower Extremity Exoskeleton, is intended to be used as a strength and endurance-enhancing suit for humans. Funded by DARPA, the Defense Advanced Research Project Agency, and being developed by the University of California at Berkeley, the goal of the suit is to help the wearer, including members of the military, disaster-relief workers, wildfire fighters and other rescue personnel, carry heavy loads of equipment and supplies over all types of terrain without negatively affecting stability. A test last year showed that a wearer could carry a heavy load but feel like he or she was actually carrying something very light.

The goal of BLEEX developers is to now create a smaller, lighter, quieter and more powerful suit, while HAL-3 developers are hoping to begin offering prototypes to health care facilities in Japan sometime this year.

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