Robotic Skeleton Takes Load Off Humans

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The next RoboMan has arrived—and he's in your nearest UC Berkeley laboratory.

A UC Berkeley team of researchers has created Berkeley Lower Extremity Exoskeleton, known as BLEEX, a self-powered exoskeleton that mimics the human body. With metal leg braces, a computerized power unit and a backpack-like structure, BLEEX takes most of the weight burden off the user, allowing humans to carry up to 70 pounds with very little effort.

"This is a very serious and important development in the robotic field," said mechanical engineering professor Koos van der Klei, director of the Robotics and Human Engineering Laboratory. "It's probably the cheapest way to solve a problem, which makes human and robotic interaction a natural way."

The design now paves the way for researchers to create similar machines, van der Klei said.

The exoskeleton is designed for the

BUDGET CUTS COULD SLICE INTO CITY FIRE SERVICES

by Sam Schemanski

Surrounding Writer

A few of the city's prototype fire trucks are currently operated by Berkeley firefighters. The vehicles, called "RoboMans," were designed by the Berkeley Fire Department to increase efficiency and effectiveness of firefighting operations.

Berkeley's Fire Department has been testing the use of RoboMans for several years, and recently began deploying them on a daily basis. The RoboMans are equipped with advanced technology that allows them to operate independently of human control, and they are capable of completing a number of tasks typically performed by firefighters.

The RoboMans are designed to assist human firefighters by performing tasks such as carrying equipment, lifting heavy objects, and even extinguishing fires. They are capable of carrying up to 700 pounds of equipment and can travel at speeds of up to 10 miles per hour.

The RoboMans are operated by a remote control system that allows firefighters to control the vehicles from a central command station. The vehicles are equipped with advanced sensors and cameras that allow them to locate and extinguish fires quickly and efficiently.

The Berkeley Fire Department has been working closely with the robotics team at UC Berkeley to develop the RoboMans and ensure their safety and reliability. The vehicles are regularly tested and evaluated to ensure they meet the department's standards for performance and safety.

The use of RoboMans has been met with mixed reactions from firefighters, with some expressing concern about the potential impact on job security. However, the Berkeley Fire Department remains committed to the continued development and deployment of the RoboMans as a valuable tool in their firefighting operations.
EXOSKELETON: Robot Frame Takes the Burden From Human Shoulders

FROM FRONT

user to trek long distances while carrying heavy loads. In the near future, its applications could range from medical to military purposes. Medics could carry injured soldiers off battlefields, firefighters could lug heavy equipment up several flights of stairs, and rescue workers could bring food and emergency supplies to areas inaccessible to vehicles. Hikers could also wear the exoskeleton to make their mountain treks easier.

In experiments at UC Berkeley, a man wearing the 100-pound frame and a 70-pound backpack reported feeling like he was carrying only a few pounds. The exoskeleton is user-friendly, and doesn't require special training, knobs or buttons for operation. Humans provide the balance while a computer calculates how to control the frame so it moves in sync with the operator, according to Kazerooni.

The biggest challenge in building robots is understanding human movement, said Matthew Mason, professor of computer science and robotics at Carnegie Mellon University, who was part of a team that developed an original robot.

"We can build a machine that knows how to play better chess than a human but not one that moves the pieces around better," Mason said.

He added that the exoskeleton was very successful in combining the best of human and robotics research.

"I see the computer evolution as just barely starting because they're completely blinded in their abilities to interact with the real world and that's where robotics come into play," Mason said.

Before the exoskeleton could be designed, researchers analyzed the mechanics behind the basic human step for about a year. They studied the forces used by arthritics and also the shock-absorbing power of knees.

UC Berkeley engineers are working on making the exoskeleton more "robust," Kazerooni said. The parts could be more compact, the engine more powerful and quiet. The frame could eventually carry up to 220 pounds.

The project was funded in 2000 by the Defense Advanced Research Projects Agency, the central research and development organization for the U.S. Department of Defense.

SLATING: Party Has Yet to Reveal Candidates Despite Looming Deadline

FROM FRONT

efficiency and participation, a small group of elected leaders who make decisions, Khan said. "They are just the growing pains of working in a broad-based coalition.

Members from the student groups felt that the process should be more open, particularly in the interviewing process, which started months earlier, Gomza said.

"There was a lot of concern on how executives were interviewed previously and how senate candidates were chosen," Tommaso said. "Not everyone was on the same page."

During the meeting, party members never even began discussing the candidates, Gomza said.

After hours of deliberation, party members came up with a new plan that satisfied most in attendance--anyone can nominate himself and each individual member will get one vote, instead of limiting each student group to a single vote. All CASERVE members who attended declined to comment on the substance of the meeting.

"We want this to stay amongst the community until the decision is final," said CASERVE Senator Ahita Cristol.

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