Snippet: This cockroach robot can withstand huge weights

By **Kelly Mayes** | Jul. 31, 2019 , 2:00 PM

Striving to create a stronger, more flexible robot, researchers are turning to the tiny but mighty creatures of the world: insects. Specifically, cockroaches. Scientists began **to observe cockroaches as they were squished**, trying to get a sense of how these sneaky little insects manage to squeeze through tight cracks and withstand heavy loads (like the crush of a human foot). Now, researchers say they have developed a robot that mirrors the movements of these tenacious critters.

One-legged, blade-shaped, and driven by an alternating current, this new robot moves with a cockroachlike bouncing motion at a speed of 20 body lengths per second (above). The roachbot is 10 millimeters long and is made of flexible materials that generate an electrical charge in response to outside forces.

To test the roachbot's speed, strength, and flexibility, the researchers put a series of weights and objects on it and timed how quickly it moved along a ruler. They found the robot is able to climb 7.5° slopes at a speed of seven body lengths per second, carry loads up to six times its own weight, and withstand the weight of an adult human foot, **approximately 1 million times heavier than the robot itself**, the researchers report today in *Science Robotics*. The roachbot is unique among hard robots in its flexible, but strong exoskeleton —most others are made of rigid parts and move slowly and clumsily as a result.

The scientists say that as these robots learn to move more efficiently, they could become widespread in environmental exploration and disaster relief. Who knew these pests would turn out to be so useful?

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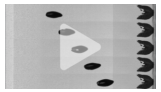

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