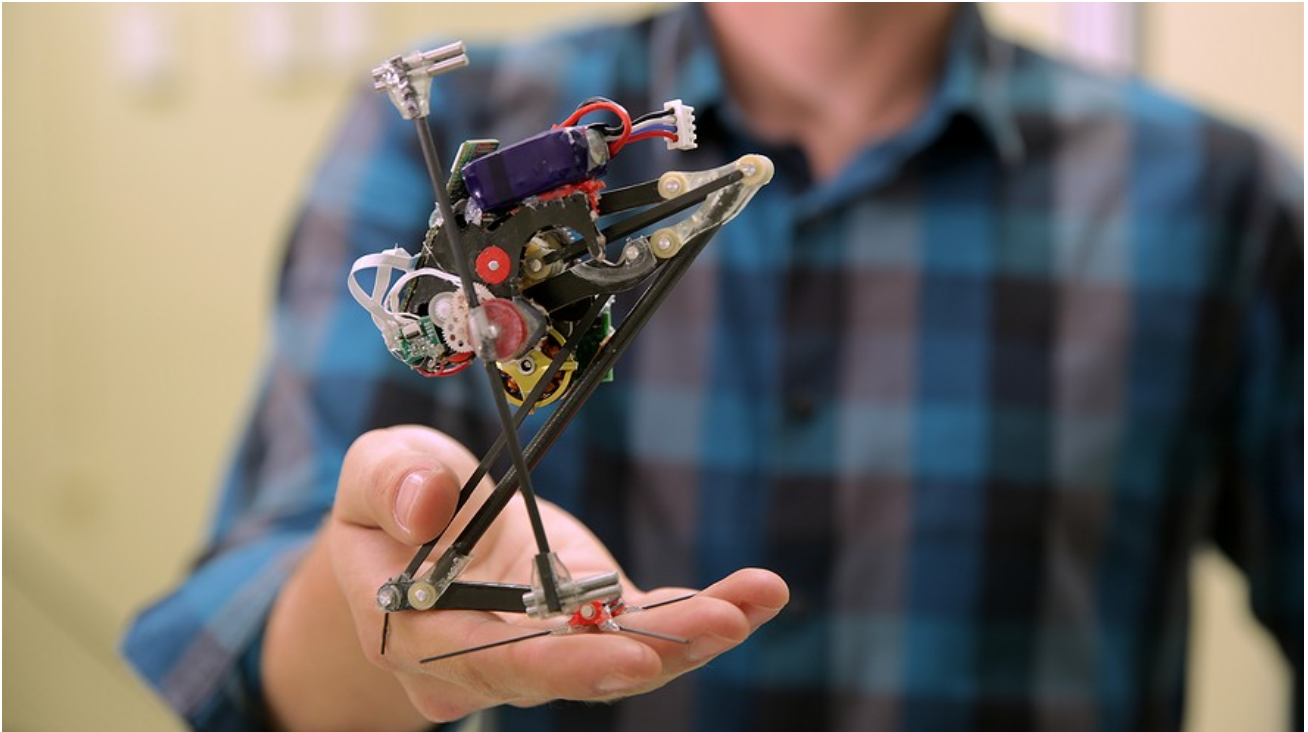


# This one-legged wonder is a jumping robot

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SALTO, the jumping robot, could one day help save lives. Stephen McNally

If the animal kingdom had its own Olympics, many different creatures could compete in the high jump. The impala, a type of antelope, can soar more than nine feet above the ground. The kangaroo can leap many times in a row. And then there's the galago, or bushbaby. This tiny primate can jump high into the air at a moment's notice.

Even the best machines can't jump as well as these animals. But robots are getting better at jumping.

Duncan Haldane is trying to help robots jump better. He studies robots at the University of California at Berkeley.

Haldane and his team built a new one-legged robot. It can leap high into the air and bounce off walls. It can't jump as quickly as the galago. But it could soon beat a bullfrog, though.

## **Are Search-And-Rescue Efforts Ahead?**

This is good news for humans: One day, Haldane hopes his robot will be used in search-and-rescue. The robot's ability to swiftly leap over rubble and bounce off walls could help save lives.

Haldane and his team wanted to copy the galago's ability to jump quickly. Most other creatures must spend time gathering energy for their jump before springing into action. But not the galago. It can leap very high in a snap.

The scientists created a new measurement to describe this ability. It's called "vertical jumping agility." It measures how high an animal can jump in 1 second.

The galago had the highest vertical jumping agility of any known animal: 2.24 meters per second (7.3 feet). That was twice as good as any robot.

Haldane's new robot is called SALTO.

## **SALTO Is The Best Jumping Robot So Far**

SALTO has a vertical jumping agility of 1.75 meters (5.7 feet) per second. That isn't as good as the galago. But it's far better than the next best robot.

The secret to SALTO's success is its single leg. The leg is made up of several links with very careful measurements. Each link contributes a small amount of force. Together, these links make a lot of energy for leaping.

When SALTO prepares to jump, it makes energy. It saves that energy in springs. That is what gives SALTO the ability to bounce off walls. Without the spring, the robot would be unprepared for the next leap. It would simply fall down.

There's still work to be done before SALTO can be put to use. Haldane's team plans to help the robot do more things with its single foot. They also want to test what it might be able to do with more legs.

## **Preparing For Real-Life Testing**

They must work on improving SALTO's small battery. They want to test it more in real-life settings.

Scientists hope that someday a jumping robot will be able to help after disasters, such as earthquakes. In the future the robot could carry small sensors. The sensors would be able to find people trapped after a disaster. The robot's tiny size — about the weight of a bar of soap — means it can search places humans can't. The robot can also work as a scout during a search-and-rescue effort. It can jump over walls that would stop a robot on wheels. Once it senses a buried person, a team of human rescuers can come find the victim.

SALTO's speed could be a lifesaver.

"The clock is always ticking" in a search-and-rescue situation, Haldane said. The robot could save precious time for rescuers.