



Ranger robot breaks record, walks 23km on single charge

The robot walked for more than 10 hours before collapsing

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It took 65,185 steps for Cornell's 4-legged bipedal robot to walk 108.5 laps on Barton Hall's 1/8-mile indoor track, setting a new world record for non-stop distance walked by an untethered legged robot - more than a half a marathon. Ranger took about 20,000 steps, over three miles, for each penny worth of electricity it used. Ranger was steered with a model-plane remote control. Commands from the remote control twist the inner pair of legs. The walking was entirely controlled by the 6 onboard microprocessors.

A team of students and faculty at Cornell University claim that their [Ranger robot](#)^[1] has set a new record for nonstop distance walked by an untethered, legged robot: 23 kilometers or 14.3 miles. To see video of the robot, [click here](#)^[2].

The previous record was held by [BigDog](#)^[3] from Boston Dynamics, which walked 12.8 miles.

Andy Ruina is in charge of the university's [Robotics and Biomechanics Lab](#)^[4] and headed up the development team. He said that they've been working on Ranger for about four years and that it helps them understand the way people and animals work.

"You can't come up with solutions until you understand the problems," he said in a phone interview. The long-term benefit to research like his is overcoming diseases and building better prostheses, he said.

The robot took 65,185 steps over nearly 11 hours before running out of battery power and collapsing. It was powered by a 25.9 volt lithium ion battery and used 262 watt-hours of energy or about three cents worth during its run.

"Our next challenge is to make it walk much further. We think it can do a full marathon," Ruina said. (A full marathon is 26.2 miles.)

After that, he hopes to make a biped robot. He and his team are waiting on a grant from the National Science Foundation, but hope to develop a successful two-legged robot in the next two to three years. He admits that biped robots have already been created, but "none of them work well."

Ranger weighs 18.5 pounds or about 8.5 kilograms. It runs on six computers using mostly ARM7 processors with it's "main brain" using an ARM9 processor. It uses a variety of sensors and runs on about 10,000 lines of code, a few hundred of which are responsible for controlling the bot.

"We take pride in the simplicity of this robot," Ruina said.

Two days before the robot completed its record, it walked another 13 miles on one charge. While it doesn't count toward the record, that means the bot walked more than 27 miles without failure.

Nick Barber covers general technology news in both text and video for IDG News Service. E-mail him at Nick_Barber@idg.com^[5] and follow him on Twitter at [@nickjb](https://twitter.com/nickjb)^[6].

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