

Nova Scotia

How robots could help keep the lights on as climate change worsens



'I think the idea of R2-D2 crawling along the line is very attractive'

[David Burke](#) · CBC News · Posted: Jun 30, 2019 6:00 AM AT | Last Updated: June 30



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Robots like like Hydro-Québec's Line Scout travel along power lines to check for defects in the wires. (Hydro Québec)

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Robots crawling over power lines could be the key to helping Canada's beleaguered electrical grids deal with the more powerful storms brought on by climate change.

In recent years floods, wildfires, ice and high winds have knocked out power to hundreds of thousands of Canadians.

But robots loaded with high-definition cameras, sensors and repair equipment can travel the lines faster and more safely than human technicians, allowing problems to be detected before they start.

Sound far fetched? It's not. These robots have been working for Hydro-Québec for years.

"A key point for us [is] to make sure the network is ready to withstand all these weather events," said Jonathan Côté, a spokesperson for technological innovation with Hydro-Québec.

it quickly."



Hydro-Québec says its robots can inspect up to 20 kilometres of power lines a day. (Hydro Québec)

That means there's a greater chance the lights stay on because older or damaged

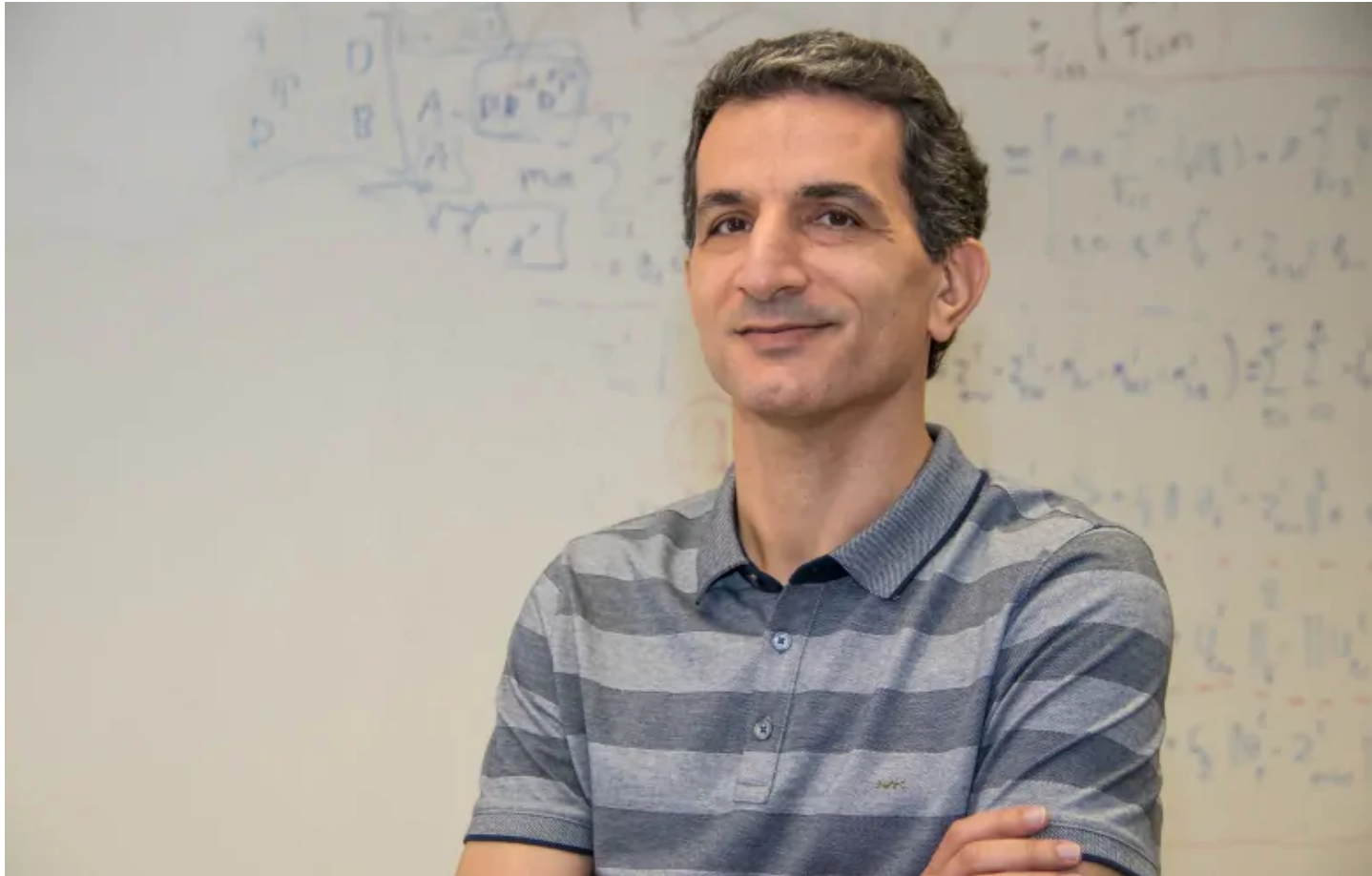
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The notion of the robot technician excites Javad Mohammadpour-Velni, an associate professor of electrical engineering at the University of Georgia.

He and a team of students built a prototype robot similar to the ones Hydro-Québec uses.



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Mohammaadpour-Velni believes the widespread adaptation of these robots could both protect workers from potentially deadly falls and electrical shocks, plus cut down on power outages.

"The most important thing is the safety and the time because ... to send a utility worker up there, they actually have to do a lot of preparation to be able to do that kind of thing," he said.

"But with this kind of system it is going to be very easy, very cost efficient, and ... very safe."



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This is the prototype robot that Mohammadpour-Velni and his students created. The prototype performed well in the lab but was never tested in the field. (Submitted by Javad Mohammadpour-Velni)

The robots have also impressed utilities in seven other countries, including the United States and the United Kingdom, which are using Hydro-Québec's technology to examine their own power grids.

Most of Hydro-Québec's robots that travel on transmission lines have to be hoisted up onto the wires by crane. The robots use modified wheels to roll along the wires while being controlled by a worker on the ground using a specialized tablet outfitted

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Hydro-Québec's new Line Ranger robot can inspect up to 20 kilometres of transmission lines a day. That's up to 10 times more than workers can do, according to Côté.



Hydro-Québec's robots are hoisted onto transmission lines by crane and are controlled by an operator on the

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The robot can also travel on the lines when there's electricity running through them, so the power doesn't have to be shut off while they do their work. Some of the robots can even make minor repairs on the lines like tightening or replacing bolts.

It's technology that Evan Dahl hopes Nova Scotia Power adopts.

Dahl lives in Back Centre, a community just outside Lunenburg. A storm knocked out power to his home for four days in 2017.



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Evan Dahl went without power for four days back in December 2017. (Submitted by Evan Dahl)

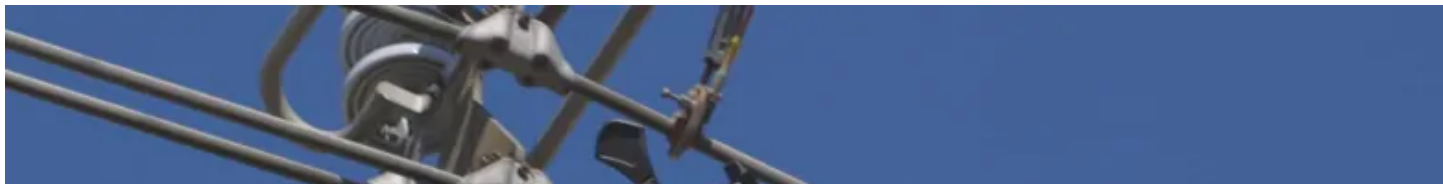
"That would probably save them a lot of work," said Dahl. "And preventing ... what I went through there two years ago, it definitely wasn't fun."

Nova Scotia Power spends \$80 million a year in upgrades to make its electrical system more reliable during storms. There's no word if the utility has any plans to experiment with robots.

But some people doubt that transmission line robots will become widely used. Robert McCullough is one of them.

He's a consultant who has spent 25 years working with public utilities and private energy firms in Canada and the U.S.

McCullough said the cutting-edge robots will soon be obsolete.



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Electrical engineering professor Javad Mohammadpour-Velni believes the widespread use of these robots could keep workers safe and help prevent power outages. (Hydro Québec)

He believes as utilities replace their aging transmission towers and lines with hardier ones in the face of climate change, they will start to install computers on transmission towers that are connected via fiber-optic cable.

Computers will monitor the lines and report any irregularities.

McCullough admits that kind of system could be years away.

"In the meantime I think the idea of R2-D2 crawling along the line is very attractive. I just have a feeling that fiber optics will be a bit cheaper."

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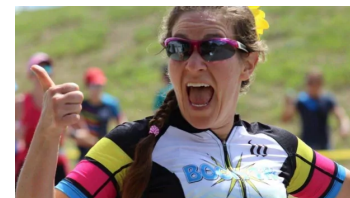
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