



AI robot lends UBC a hand in alternative-energy research

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Researchers at the University of British Columbia working to develop alternative energy sources are getting a jump-start from Ada, a robot that is using artificial intelligence to help scientists design and conduct experiments – and even figure out which ones need to be done.

Ada is the world's first fully autonomous AI robotic platform. The project, which was handed \$8-million in federal research funding on Wednesday by the Ministry of Natural Resources, is the first major Canadian undertaking to come out of the commitment to fund such research under the Paris climate accord.

Spearheaded by researchers Jason Hein and Curtis Berlinguette, the robot is able to interpret the results of its experiments independently. It's also able to predict follow-up experiments. The robotic platform is currently being used to discover and develop materials for such things as advanced solar cells and renewable fuels.

"The robot is alive and training itself," Mr. Hein said in a phone interview. "When it's predicting what experiment to do, it's not limited by one person's idea. We can plug it into a database with the entire world's knowledge of what might be the best experiment, and it can draw from that as a brain."

The robot has an arm that is capable of performing any manual task that a human being might perform in a lab. It is able to pick up tools, measure items, mix and pour liquids – all with consistent levels of precision.

The major difference between Ada and its robotic predecessors is that it's the first of its kind to have memory. The robot is able to remember which experiments worked and which ones didn't, and plan its own experiments accordingly. Ada does not require human beings to analyze the results of its experiments.

The project's researchers say that Ada will be able to autonomously accomplish in one year what it would normally take 10 years for human researchers.

Mr. Berlinguette noted the current ratio of renewable-energy resources compared with the global energy mix is not that much different from 30 years ago. It usually takes a couple of decades before newly discovered clean energy resources get fully deployed and commercialized.

"[Our goal] is to discover a new material for a clean energy application and ... faster than ever before," he said. "We have to come up with ways to really accelerate the rate of renewables in our energy market ... it's critical."

CURTIS P BERLINGUETTE

While the robot is currently being used to develop solar panels, the two researchers hope the technology can be deployed in many other ways, including in the pharmaceutical and health industries.

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"As we've shown other countries, other labs, other companies of what it can do do ... people start asking questions like, 'Can we use this for thermoelectrics, smart cooling, fuel-cell technology?'" Mr. Hein said. "Right now, we're only limited by our imagination and scope."

The project has partnered with North Robotics, a manufacturing company based in Victoria that will be providing custom parts and fabrications.

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