



RESEARCH2REALITY

Shining a light on research & innovation.

Let the Laboratory Do Its Own Work

An interview with Alán Aspuru-Guzik, Quantum Mechanic
University of Toronto

All of us scientists, we don't take advantage of automation as much as we could. So in my lab, we have been thinking a lot about how robotics and artificial intelligence can combine with chemistry to create something that we like to call self-driving laboratories: basically, a laboratory where, as much as possible, the mundane decisions of what the experiment to be done next, the next conditions to try, are actually optimized using artificial intelligence. And therefore we don't waste reagents, we don't waste time, and we don't waste all the resources that will make science progress slower.

How has your work contributed to this field?

When I moved to Canada, we started building such a self-driving laboratory for developing thin films. And you might say, well why are thin films so important? Well it turns out that almost every energy technology involves a thin film. Say a solar cell or a battery has these materials laid out in a very thin layer. So we built a machine that is actually manufacturing and testing thin films with different conditions to try to optimize their performance. So that's an example of one of the things that we're doing concretely to try to accelerate innovation.

What is the future of self-driving labs?

Within five years, I would like my lab and my collaborators around the world to be able to demonstrate that these self-driving laboratories not only are

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