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Decoding the Brain

| An interview with Professor Chris Eliasmith
| Brain Researcher, University of Waterloo

What is brain modelling?

So we've recently built what is currently the world's largest functional brain model. What's interesting about neuroscience is trying to figure out what the brain's actually doing; how it controls our behaviour. And so our ability to actually begin to build things at a much larger scale that can do things like have memories, control your arms, and so on, is pretty exciting.

How does your research work?

We're building software and in the software we're simulating individual neurons. So these are the components that make up the brain. And then we connect millions of them together and we want to figure out how to make them communicate so that they can actually do information processing which is necessary to recognize an object, or to count, or to complete different kinds of patterns and so on.

What are the potential benefits of your research?

On the health side, you know it would be ideal if we could do something like scan a particular patient's brain, take what we learn and build a model based on that. And we could do things like test drugs, test interventions, look at what happens during stroke on that particular patient's brain, and therefore tailor a solution to the problem that we're trying to deal with, specifically to that person's brain. And then on the other side, just trying to build robots, what have you, devices, intelligent agents that are on the web. I mean, you can imagine going home and having your entire house clean and all your dishes done and everything because you have a robot which is actually as, sort of, physically capable as humans are. We're very far away from that kind of thing, but you know, as we improve our understanding of not only how, sort of, brains in general work, but how particular brains differ from one another, I think that is a real possibility.