

IBM peers into Numenta machine intelligence approach

9 April 2015, by Nancy Owano



Are we nowhere near the limits to which machines can make sense out of raw data? Some scientists would say that today's programmed computers cannot match a computer approach using biological learning principles for next steps in achieving machine intelligence. Enter Numenta. The premise of Numenta is that the [brain](#) is the best example of an intelligent system and provides a roadmap for building intelligent machines. The "machine intelligence" company is in the business of promoting its computational framework based on principles of the brain along with a software suite. They said "an extensive licensing strategy will enable this technology to be embedded within many different applications."

Numenta's technology is called Hierarchical Temporal Memory (HTM). Jeff Hawkins, company co-founder, wrote *On Intelligence*, which outlines HTM and describes progress on understanding the neocortex. For developers, the company's [machine intelligence algorithms](#), encoders and application code are available in an open source project called NuPIC, which stands for Numenta [Platform](#) for

Intelligent Computing. It's a Python / C++ [open source](#) project.

Now, [reported](#) *MIT Technology Review's* Tim Simonite, IBM has set up a research group to work on Numenta's [learning](#) algorithms at its Almaden research lab in San Jose, California. The project, Cortical Learning Center, involves about 100 people. The algorithms are being put to the test to interpret satellite imagery of crops and, he said, the group is "working on designs for computers that would implement Hawkins's ideas in hardware." The aim is to spot early warnings signs of mechanical failures in data from pumps or other machinery, he added. Hawkins said in *MIT Technology Review*, "We think we're building an intellectual property base for the next 30 years of computing."

Simonite recalled comments made by IBM Research Winfried Wilcke earlier this year when he said experts usually must train machine learning software with example data before it can go to work, while Numenta's algorithms might make it possible to apply machine learning to many more problems. Simonite also drew the distinction between this and deep learning, where "results have been striking, but deep learning does not mimic biology closely." Those who developed the Numenta algorithms exerted great effort to simulate how the neurons work, a core piece of the technology.

The Numenta algorithms are aimed at recreating the behavior of repeating circuits of neurons found in the neocortex, the brain's outer surface and place of most of the higher functions of the brain. High-level vision, hearing, touch, movement, language, and planning are performed by the neocortex. The accent in Numenta's work is on the word recreate. Hawkins stated that the technology goal was "not to be biologically inspired; I want to recreate exactly."

More information: numenta.com/

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