This Startup Has Developed A New Artificial Intelligence That Can (Sometimes) Beat Google

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Gamalon founder and CEO Ben Vigoda (Photo credit; Gamalon)

The entire tech industry has fallen hard for a branch of artificial intelligence called deep learning. Also known as deep neural networks, the AI involves throwing massive amounts of data at a neural network to train the system to understand things like speech and images. If you want to train the system to recognize a cat, for example, show it 10,000 pictures over and over again of every possible variation of what a cat looks like. But don't show it a dog, because then the AI will get really confused.

Gamalon, a new startup coming out of stealth on Tuesday, claims it's developed an AI technique that requires training the system on only a few pieces data while achieving the same levels of accuracy as the exhaustively-trained neural networks.

The company's secret sauce is a technique it's calling the "Bayesian Program Synthesis," which deals in the realm of probabilities. The technique writes its own code that best explains the data in front of it. You teach the system to recognize a cat with only a few examples -- whiskers, tail, eyes. From there, the system can continually update its understanding of what a cat looks with each new example. This is the opposite of what deep learning offers, where you have to train the system by showing it as many examples of a cat as you can. It can't handle uncertainty.

By reducing the amount of training data, this also reduces the ridiculous

amounts of computing power required by deep learning systems. Instead of occupying hundreds of servers to train massive neural networks using expensive graphics processors (usually provided by Nvidia), Gamalon can get its models trained on the same processors contained in an iPad.

“It’s going to get worse training deep learning models,” Gamalon founder and CEO Ben Vigoda said. “The more complex things you teach it, like self-driving cars, the more training data you need.”

The company claims its AI system is 100 times more efficient when benchmarked against Google's deep learning framework, TensorFlow.

Gamalon's first product based on the Bayesian technique involves converting unstructured streams of text data into clean rows of structured data. The target application is enterprises trying to take massive amounts of paperworks and inputting all that into a computer database. Gamalon is letting customers plug its software into Amazon, Microsoft and Google cloud backends.

Enterprise data cleaning isn't the sexiest area of AI to be exploring right now with lofty autonomous vehicle projects popping up everyday, but it's an area Gamalon is using to prove out its model and make some money.

“The prime business of unstructured data is in the billions,” said Aydin Senkut, founder and managing director of Felicis Ventures, an investor in Gamalon. “There are companies built on hundreds of billions of dollars just on data cleaning.”

But this isn't to say Gamalon couldn't compete in areas outside of organizing messy corporate documents into neat spreadsheets. Gamalon has pitted its techniques in image recognition against Google's TensorFlow using the tech giant's deep learning-powered "Quick, Draw" program. When Google asks the user to draw a floor lamp, the AI gets confused if, say, the user draws a chair next to it, because it has difficulty separating the two objects -- Google

thinks you drew a house or a church. But using Gamalon's system, the AI can identify the two separate objects for what they are -- a floor lamp and a chair.

Before Gamalon, Vigoda was cofounder and CEO of Lyric Semiconductor, which developed a "probability processor" and was acquired by Analog Devices in 2011. Vigoda received a PhD in statistical physics and machine learning from the Massachusetts Institute of Technology.

Gamalon claims to have received the single largest investment from the U.S. Department of Defense's DARPA program, with $7.7 million in government contracts. The company has also raised $4.5 million in a seed round led by Felicis Ventures. The other seed investors included Boston Seed Capital, Rivas Capital, Adam D'Angelo, Andy Bechtolsheim, Steve Blank, Ivan Chong and Georges Harik.

For now, Gamalon will focus its business on selling its data cleaning service to corporate customers. Maybe down the line it will consider offering its Bayesian machine learning technique to outsiders, but it would be a hard sell as the tech industry has adopted deep learning systems fanatically.

"The pendulum has swung so far towards deep learning that we don't see building a business trying to get people to accept or adopt this," Vigoda said. "If we can show what we can do for business use cases, then eventually people will come to appreciate it."

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