
From: jeffrey E. <jeevacation@gmail.com>
Sent: Friday, March 9, 2018 10:40 AM
To: Joscha Bach
Subject: Re:

I would think of it more of a space / field effects = Not recursive algorithm s

[REDACTED] > wrote:

Last week I got to know Steve Hyman, Daniel Kahneman and Bo= Horvitz. Telefonica invited all of us to a two day workshop with Pablo Ro=riguez, Ken Morse and a few others, where we were meant to advise them on =ow to use AI for health applications. I told them that I think the goal of=therapeutic invention is not to increase happiness, but integrity. Happine=s is merely an indicator, not the benchmark. Current apps tend to subvert =he motivation of people, but I don't think that this is necessary or t=e best strategy. Humans are meant to be programmable, not subverted. They =erceive their programming as "higher purpose". If we can come fr=m the top, supporting purpose, instead of from the bottom, subverting atte=tion, we might be more successful. (Downside might be that we create cults=)

Of the bunch, Hyman managed to be the most interesting (Kahneman was very c=arismatic but mostly tried to see if he could identify an application for =is system one/system two theory). Gary Marcus was there, too, but annoyed =everyone by being too insecure to deal with his incompetence.

Did I tell you that I discovered that Deep Learning might be best understoo= as Second order AI?

First order AI was the classical AI that was started by Marvin Minsky in th= 1950ies, and it worked by figuring out how we (or an abstract system) can=perform a task that requires intelligence, and then implementing that algo=ithm directly. It yielded most of the progress we saw until recently: ches= programs, data bases, language parsers etc.

Second order AI does not implement the functionality directly, but we write=the algorithms that figure out the functionality by themselves. Second ord=r AI is automated function approximation. Learning has existed for a long =ime in AI of course, but Deep Learning means compositional function approx=mation.

Our current approximator paradigm is mostly the neural network, i.e. chaine= normalized weighted sums of real values that we adapt by changing the wei=hts with stochastic gradient descent, using the chain rule. This works wel= for linear algebra and the fat end of compact polynomials, but it does no= work well for conditional loops, recursion and many other constructs that=we might want to learn. Ultimately, we want to learn any kind of algorithm=that runs efficiently on the available hardware.

Neural network learning is very slow. The different learning algorithms are=quite similar in the amount of structure they can squeeze out of the same =raining data, but they need far more passes over the data than our nervous=system.

The solution might be meta learning: we write algorithms that learn how to =reate learning algorithms. Evolution is meta learning. Meta learning is go=ng to be third order AI and perhaps trigger a similar wave as deep learnin=.

I intend to visit NYC for a workshop at NYU on the weekend of the 16th.

We just moved into a new apartment; the previous one had only two bedrooms =nd this one has three, so I can have a study. It seems that we are as luck= with the new landlords as with the previous ones.

Bests, and thank you for everything!

> On Mar 8, 2018, at 16:37, jeffrey E. <jeevacation@gmail.com <mailto:jeevacation@gmail.com>> wrote:
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