
From: Joscha Bach <[REDACTED]>
Sent: Saturday, March 10, 2018 1:52 AM
To: Jeffrey Epstein
Subject: Re:
Attachments: signature.asc

Hmm. I'd say that there is a multidimensional space in which understanding is projected. Understanding is the creation of a mapping between the features of a domain and a function that I already know how to compute, so I can simulate the domain. Shallow understanding involves mapping of a particular feature configuration, deeper understanding explores the latent variables of the feature set. There is usually more than one way of creating such a mapping, and when we have found several, we can also identify relationships between the mappings. Category theory systematizes that.

When you describe your understandings (such as the path of light through space), it seems to me that your perspective is descriptive, i.e. you look at the emergent pattern that is generated by your understanding, without looking at the structure of the generator itself. I try to understand that generator, i.e. how to create a structure that can reproduce the desired pattern. This constructive perspective is what computationalism is all about.

Btw, Google has just announced that they think they might be getting closer to quantum supremacy:
<https://www.technologyreview.com/s/610274/google-thinks-its-close-to-quantum-supremacy-heres-what-that-really-means/>

If they ever get there, I will be forced to revise a part of my current preliminary model of how the world works, which would be very exciting. It would probably mean that digital physics must be wrong, and finite automaton computationalism must be only treated as a theory about models built on constructionist formal languages, and I might get converted to Scott Aaronson's views.

> On Mar 9, 2018, at 12:08, jeffrey E. <jeevacation@gmail.com> wrote:

>

> understanding is a multi dimensional space the language is a projection in that space. or an arrow in category theory. the local point has history. so like the play appears different from every seat in the theatre the integration over each point projects is understanding on the language.

>

> On Fri, Mar 9, 2018 at 5:33 PM, Joscha Bach <[REDACTED]> wrote:

> What do you think of as space/field effects? The universe or learning?

>

> Btw., did you ever come across Schmidhuber's idea of a Goedel Machine?

>

>

>

>> On Mar 9, 2018, at 05:39, jeffrey E. <jeevacation@gmail.com> wrote:

>>

>> I would think of it more of a space / field effects, Not recursive algorithms

>>

>> On Fri, Mar 9, 2018 at 6:06 AM Joscha Bach <[REDACTED]> wrote:

>> Last week I got to know Steve Hyman, Daniel Kahneman and Bob
>> =orvitz. Telefonica invited all of us to a two day workshop with Pablo =odriguez, Ken Morse and a few others, where
we were meant to advise =hem on how to use AI for health applications. I told them that I think =he goal of therapeutic
invention is not to increase happiness, but =ntegrity. Happiness is merely an indicator, not the benchmark. Current =pps
tend to subvert the motivation of people, but I don't think that =his is necessary or the best strategy. Humans are meant
to be =rogrammable, not subverted. They perceive their programming as "higher =urpose". If we can come from the top,
supporting purpose, instead of =rom the bottom, subverting attention, we might be more successful. =Downside might
be that we create cults.) Of the bunch, Hyman managed to be the most interesting (Kahneman was =ery charismatic but
mostly tried to see if he could identify an =pplication for his system one/system two theory). Gary Marcus was =here,
too, but annoyed everyone by being too insecure to deal with his =ncompetence.

>>

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

>>

>> First order AI was the classical AI that was started by Marvin =insky in the 1950ies, and it worked by figuring out how
we (or an =bstract system) can perform a task that requires intelligence, and then =mplementing that algorithm directly.
It yielded most of the progress we =aw until recently: chess programs, data bases, language parsers etc.

>> Second order AI does not implement the functionality directly, but =e write the algorithms that figure out the
functionality by themselves. =econd order AI is automated function approximation. Learning has =isted for a long time
in AI of course, but Deep Learning means =ompositional function approximation.

>> Our current approximator paradigm is mostly the neural network, i.e. =hained normalized weighted sums of real
values that we adapt by =hanging the weights with stochastic gradient descent, using the chain =ule. This works well for
linear algebra and the fat end of compact =olynomials, but it does not work well for conditional loops, recursion =nd
many other constructs that we might want to learn. Ultimately, we =ant to learn any kind of algorithm that runs
efficiently on the =available hardware.

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

>> The solution might be meta learning: we write algorithms that learn =ow to create learning algorithms. Evolution is
meta learning. Meta =earning is going to be third order AI and perhaps trigger a similar =ave as deep learning.

>>

>> I intend to visit NYC for a workshop at NYU on the weekend of the =6th.

>>

>> We just moved into a new apartment; the previous one had only two =edrooms and this one has three, so I can have
a study. It seems that we =re as lucky with the new landlords as with the previous ones.

>>

>> Bests, and thank you for everything!

>>

>> Joscha

>>

>>

>>

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

>>>

>>> progress?

>>>

>>> --

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