Re: Neural netss (was Re: death of the mind.)

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From: David Longley (*David_at_lon.demon.co.uk*)
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In message <8d8494cf.0409281312.a68bdac@posting.google.com>, dan michaels <feedbackdroids@yahoo.com> writes
>Wolf Kirchmeir <wwolfkir@sympatico.ca> wrote in message
>news:<gAy5d.1973$MD5.21482@news20.bellglobal.com>...
>
>> >
>> > If we are to talk about electronic devices, it might help to think of
>> > the brain as a PAL (programmable array logic} rather than a Von
>> > Neumann computer. Then the signal energy comes in through the sensory
>> > neurons, filters through the interneurons, and comes out as a motor
>> > act. (Majendie's Law) No magic, just circuitry.
>>
>> That looks like a Better Idea, all right. Just how complexly
>> interconnected can one make the elements of a PLA? Does each element
>> have a single input and a single output? If so, it's not IMO complex
>> enough to do what biological NNs do. See below.
>>
>
>
>Neither approach is very good. Obvious for the von Neumann approach.
>Also, PLA's and PAL's are not all that powerful. Made for implementing
>small sets of combinational logic is all. A few inputs and a few
>outputs. I seriously doubt the brain is a combinational logic machine.
>Misnomer still extant from McCulloch+Pitts original 1943 paper. The
>first sentence of the paper starts out badly .....
>
>"... Because of the 'all−or−none' character of nervous activity,
>neural events and the relation among them can be treated by means of
>propositional logic ..."
>
>Time to move on. Interesting that McCulloch was an M.D., if I'm not
>mistaken.
>==========
>
>
>> > Now we have to think how we should abstract groups from this amorphous
>> > mass of interneurons. We can talk about motor program generators,
>> > initiators, and controllers−−not word processing. What circuitry do we

>> > need so that a motor program generator can be modified by experience?
>>
>> Feedback _networks_ (not simple loops.)
>>
>
>
>Good answer. Had "I" made it, King David would be bouncing off the
>walls again, about now. Good to see so many people are picking up on
>the feedback thingie.
>==========

Have you even *read* the first four sections of this?

<http://www.longley.demon.co.uk/Frag.htm>

What was Edelman doing in 1981? How did things in neuroscience and behaviour start changing in the late 70s? Why did they start changing? What is so much of the *hard* science based upon − there's a three letter acronym. Where was the work which has driven that done? Let's see how good at research you actually are.

(In fact, reading and understanding the last four sections might be worth your while too unless you really do want to just continue spouting non sequiturs and ignorant abuse.)

>
>
>> > What circuitry to throttle the signal energy temporarily as it rushes
>> > through one path so that it also has time to run through an
>> > alternative path?
>>
>> A simple loop NN can hold a signal spike indefinitely: Ni −−>Nx −−> Ny
>> −−> Nx will hold the input from Ni as long as the NN runs. But we also
>> need some Nx −−>Ny so that the signal can eventaully go someplace else.
>> This means that any neuron can have more than one output. That's the key
>> IMO.
>>
>
>
>Yes, and in the real brain, take what you just said and scale it by
>about a billion times ... or more.
>==========
>
>
>> NB that this is the only way a NN can store data, and then storage is in
>> fact a constant cycle through the same sequence, which is not what
>> storage means in ref. to computers. RAM is refreshed, but that's not the
>> same process. In actual biological NNs the signal eventually decays.
>>
>
>Loops are good, but what about synaptic modifications?

>==========
>
>
>> > How does the signal energy actuate the throttle? How
>> > does it disable the throttle?
>>
>> Use inhibiting signals as well activating ones. Each neuron has one
>> input, which requires a certain activation strength before it fires. Use
>> a few holding loops to accumulate signals until there are enough to fire
>> some downstream neuron Nk. Use inhibiting feedback from Nk to the
>> holding loops to switch them off so that a new signal can be held. NB,
>> again, that Nk must have at least two outputs. In general any given
>> neuron will have a single input and one or more outputs. It's the
>> multiple outputs that enable the topology you're looking for. In
>> biological NNs, most neurons have two or more outputs.
>>
>
>
>Strange statement ... "... In general any given neuron will have a
>single input ...". 5,000−10,000 inputs is more like it. And
>1,000−2,000 outputs.
>
>So, given this, how would you revise your description above, regards
>your simple loop? ..... Ni −−>Nx −−> Ny −−> Nx
>
>Now, we have a really interesting problem.
>==========
>
>
>> Problem is, AFAIK there's no simple way to describe such networks. Graph
>> theory can characterise the topology of networks (by type of
>> connectivity, for example), but AFAICT it can't handle the actual
>> topology of a NN that's complex enough to do interesting things.
>>
>> > ray
>>
>
>
>Something, in a mathematical sense, inbetween graph theory and
>descriptive equations for kinetics of gases. Complexity theory?
>==========
>
>
>> The above ideas are _not_ original with me. I first came across them in
>> the early to mid−60s in a book title The Minds of Robots, which
>> disappeared from the university library shortly after I returned it, so
>> I never found it again. Can't recall the author, but do remember the
>> book was published in Bloomington.

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David Longley