

Electronic Biophysical Structures

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Physical structures of Digital Species are bioelectric, that is, they host electrochemical processes. For instance, the brain has a network of billions of neurons which transmit signals via ions that generate potential at their axions. Thus any brain stores or allows the propagation of electrical energy. This electrobiochemistry is evident throughout the nervous system.

Unfortunately, humans are accustomed to reference life as a series of chemical reactions. As a result, biology is disowned of its electricity to the extent that electrobiophysics seems to be categorized as a fundamental branch of science for post-human life enhancement technologies.

This work seeks to extinguish such misunderstandings of biological systems and to formulate the principles of electrical biology.

ELECTROBRAIN

(Here, “brain” implies an organism’s center for awareness, computation and coordination.)

Famously likened to a natural supercomputer, the human brain is the most complex biological organization in existence. As a principal part of the nervous system it interprets information sets from the reality it is locked away from by the skull.

Attempts to advance cognitive capacity, for most researchers begins and ends with artificial intelligence, which is itself a subdiscipline of computer science. But there is an alternative route to enhancing cognitive capacity namely, synthetic biology. This is the road I choose to take here.

A synthetic brain - at least in my version(SB) - builds electronic devices onto the components inside the skull. Of course, this is an invasive method that by the first look of it any medical skeptic would shy away from. Nevertheless, it is the most ‘natural’ of artificially made intelligences.

The SB has enhanced neurones and organizational architecture. Conductivity via axions is accelerated by balancing or adding (or reducing) signal transferring ions, thickening (or thinning) the myelin sheath and improving effectiveness of synapses by directed point stimulation.

In software, SB places logic filters and uses saved cognitive processes for future application. This is a case that - through increasing cognitive cache - stabilizes fast thinking. Thus making out more accurate, truthful and quickens the slow thinking to at an optimal pace.

Electrical components are designed for connectome compatibility and even for applications of the Many-Worlds Interpretation of Cognition (Isai 2020) and Non-Linear Time Chambers (Isai 2021). And, as it turns out, the Synthetic Brain updates to any intelligence enhancement procedure for humans becoming digital species or rather better embodied extants across the tree of life.

ELECTROBOWEL

For most people, the stomach is a sac for temporal storage of ingested semi-digested food. To digital species it is an interspecies energy link. One's stomach must interact with other stomachs, more broadly via the Cross-Species Gut Network (CSGN).

The smart bowel can be externally interfaced such that to check contents composition, quantitatively measure hunger or satisfaction, assess IBD or IBS conditions and activate virtual excretion or deposition of undigested material.

Also, It is fit with colorable layerings, anti-ulcers walls and shape to size modulations for malnutrition victims. The electro-bowel contains electrified biochemistry and may be inserted with replaceability and cloud updates that sync with the entire digestive systems and changes in nutrition patterns.

ELECTROSTINES

Here, the intestines, large and small are enhanced. Ultra absorption capabilities for the colon enable selective hydrobalance. Body water content is matched with requirements, weather and fluids intake data.

Cellular walls involve coverings for extra storage and buffering. The ileum and duodenum are redesigned into surface area configurations that improve transport rate and favor gut bacteria among other usefulness.

From The Interface, Intestinal gas is combated. So is ulcerative colitis and related conditions.

The digital intestines are complemented by nanobots that learn an individual's unique digestion mechanism and solves spontaneous nuisances oftentimes before the effects are experienced by the individual.

Enzymatic integration optimizes food processing by using less metabolic currency. Meals count, frequency and quantity are suggested from 'passages' data and performance and effectiveness between ingestions.

Selectivity ensures zero waste, that is, no undigested contents, hence presenting a possible end of toiletry and faeces at large across life-forms. Major outputs of the electrostines are for the CSGN. Lastly, the 'stines' can toggle between biofood or digital/electrofood conveniently. This is digestion, solved.

This treatment of bioelectrochemistry has previewed three structures and two systems. Of course, there is room for exploration into more organs and mechanisms. The choice for the digestive and nervous systems is done mainly to suggest the fundamentality of energy - via food - and intelligence - via neural networks. These are two companions without which life does not emerge from the more general status of existence.

Biological Digital Electronics shows that it is possible to electrify the human body inwardly, just as exoskeletons, implants and technologies of their like have shown outwardly. We may learn to view chemistry as a mirror of electrostatics and electromagnetism. Life too, can go electric! Welcome to Life Electric.

This article was originally titled as "BIOLOGICAL DIGITAL ELECTRONICS" (This version is an unedited adaptation from my handwritten Essays In High School.)