Edition 8, July 2023

Editor's Note:

To have hope is to want an outcome that makes your life better in some way. It not only can help make a tough present situation more bearable but also can eventually improve our lives because envisioning a better future motivates you to take the steps to make it happen. Bengal Hope Foundation remembers and reminds this throughout journey during last six months since inception. We have been trying to implement process, continuous grooming through various modern technology discussion, tireless effort to connect with TPOs, Principal of respective diploma colleges across West Bengal. With this effort, we could reach mark of below numbers.

YouTube Channel:
https://www.youtube.com/channel/UCcCga861luTldMZtVYERyVA - 68 subscribers, 29 # recorded sessions on technical/grooming topics

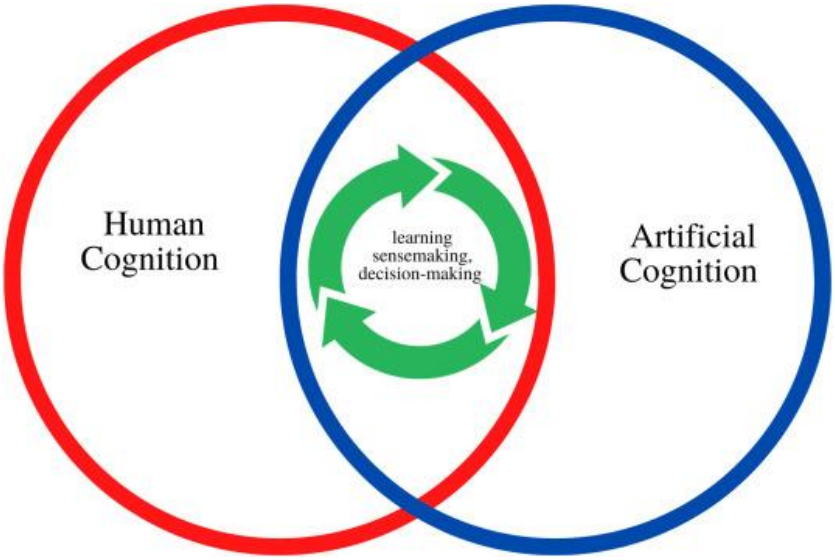
LinkedIn page: **https://www.linkedin.com/company/hope-foundation-bengal** - 1172+ followers with daily job posting

Facebook Page: **https://www.facebook.com/hopefoundation20** - Close to 600 followers

In order to help the students of those colleges to groom themselves, to be interview-ready, to get trained on various technical and non-technical sub-jects outside their curriculum, to obtain relevant industry knowledge through internship and to have a stronger career launch pad.

This month we are releasing on ˙**Confliction between Artificial Intelligence & Cognitive Psychology on Human Brain**', by Ms. Bidisha Sasmal.

CONFLICTION BETWEEN ARTIFICIAL INTELLIGENCE & COGNITIVE PSYCHOLOGY ON HUMAN BRAIN



Cognitive psychology has been very instructive for the development of AI, and current AI design makes extensive reference to human cognitive models. The process of human mental activity is simulated in various aspects such as attention, encoding, and memory. Cognitive psychological artificial intelligence has been researched in many fields. In this manuscript, we study the basic contents and latest progress of psychology and brain science, the learning of AI through the higher mental processes of human cognition, including subjective mental orientations such as thinking and emotion. Artificial intelligence is trained to recognize emotions, understand human feelings, and replicate the human psyche, which in turn accelerates research in cognitive psychology.

AI and Human cognition

Some of fundamental questions of AI are:

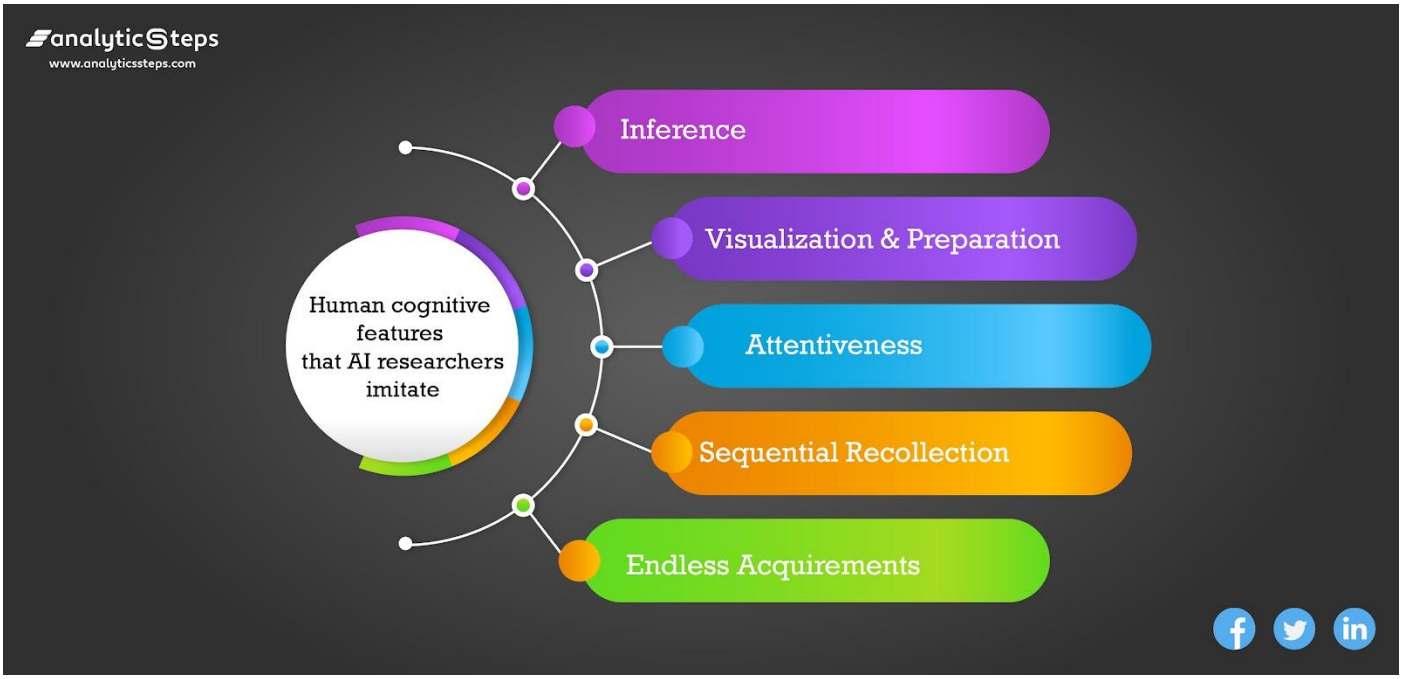
- What kind of a thinking machine is the brain?
- How can human thinking be emulated by a machine?
- Can human thinking be surpassed by computers?
- Is pursuit of these issues worthwhile?

Brain

The answer to the first question is beginning to take shape after a century of research in psychology, especially during the past several decades of research in cognition. What we have learned about our thinking machine, called the brain, is that it is fundamentally different

from the von Newman computers now in common use. AI would be further along if computers resembled brains more closely. To clarify this matter, I have proposed the following comparative resume:

	Silicon-Based Computers (von Newman type)	**Carbon-Based Brains (Humans)**
Processing speed	In nanoseconds	In milliseconds to seconds
Type	Serial processor	Parallel processor
Storage capacity	Vast, for digitally coded information	Vast, for visual and linguistic information
Material	Silicon and electronic supply system (for examples, transistors, switches, and electricity)	Neurons and organic supply system (for example, capillaries and blood)
cooperation	Absolutely obedient (does exactly what it is told)	Generally cooperative, but if pressed is likely to rebel (has a mind of its own)
Learning capacity	Simple minded ruled governed	conceptual
Best features	Can process an immense amount of data in a short period of time without complaint Cost efficient, rule governed, easy to maintain, and predictable	Ambulatory; has language, speech, vision and emotions.
Worst features	Does not self-learn easily; has difficulty with complex human cognitive tasks such as language understanding and production; is large and requires power inhibiting its mobility.	Has limited capacity for information processing and storage; is forgetful; is expensive to maintain requiring food, drink, sleep, oxygen, and moderate temperature in addition to a whole list of bio-psychological needs, e.g., love, belongingness, sex, rock and roll music, and game playing.



Human Thinking-Computer

The answer to the second question, at least within the connectionist camp, is that human thinking can best be emulated by modeling a machine after basic neurological structures.

Computer Superiority

Some computer programs work far more effectively than human thinking; most, however, are at best clumsy counterfeits of the real thing. Computer can solve some problems, such as detailed mathematical ones, faster and more accurately than humans can. Other tasks, such as making generalizations and learning new patterns of activity, are done well by humans but not by computers.

Worthwhile

Finally, the easy answer to whether we should pursue these issues is yes. We learn more about human thinking and machine thinking in the process. Others argue that the pursuit of AI is as foolish as tilting windmills.

As shown the table comparing von Newman-type computers with brains, it is no wonder AI scientists have been frustrated, if not confused. We are on the verge of a conceptual breakthrough- perhaps a paradigm shift- in AI, in which the first steps have already been taken to make computers more brain like in terms of both their structure and their process. Neuron-network system, PDP models and connectionism are attempting to discover the computational principles that govern networks of neuron in the human nervous system. They do this by what may seem to be a highly abstract means. Units may represent neurons, but units follow laws derived from neuron behavior. That is, a unit can be paired with other units, the association between them can be strengthened or weakened, and they can achieve stable relations, and so on (Churchland 1989).

An important concept has also been proposed with regard to neuro-networks: they can also learn. That is, through a system of synapse-like weighs, the infrastructure of the brain can change through experience (which may be externally or internally determined).

It is far too early to know how successful these efforts will be. It is not too early to know that the new way of looking at human cognition has enjoyed great enthusiasm among its proponents. Even the casual student of cognitive psychology should be sensitized to this important contribution to psychology and be on the lookout for future developments.

Super Biology

While American scientists of a generation ago tinkered with the notion that they could build a brain like computer. In Japan one scientist, Aizawa, is building a brain like computer with real nerve cells intermingled with electronic devices in an effort to fabricate a crude, semi artificial neural network. So far, he has successfully combined cells with the semiconducting compound indium tin oxide and found that under very weak electrical stimulation organic cells respond with controlled growth. It is too easily to think of an artificial brain, but such devices might be useful as an interface between the nervous system and prostheses such as an artificial eye.

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