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AI and the mind

innovation

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MIND is central to our sense of well-being, and to the success of everyone, including prized technology entrepreneurs. Apple's Siri and Amazon's Alexa give us a glimpse of artificial intelligence (AI), expertly programed software emulating the human mind. Voice and image recognition systems on smart phones, e-mail spam filters, and interactive e-commerce platforms are more common examples.

The Three Square Market company has come up with a rice-grain-size smart chip that can be inserted under the skin to enable a person to make transactions without a credit card, cash or a smart phone.

AI enabled systems are designed to automate tasks requiring intelligence and large data analysis, learn and adapt. AI is projected to add new jobs and trillions of dollars to the world economies. Accenture recently reported that AI will add 250 billion dollars to the Singapore economy in the next decade.

Information processing speeds of synthetic non-biological or non-natural systems are catching up with the human mind.

Such developments prompt us to revisit the famed brain-mind problem, that is, the relationship of mind and brain, passionately debated by philosophers, spiritual gurus, and scientists for millennia. Attributes of the mind include curiosity, imagination, memory, language, critical thinking, intelligence, intuition, prospection, vanity, aspiration, concern, greed, dreams, fantasies, trust, free will, mindset and so on.

Moreover the mind is transient, and changes over a life span. Inherited genetics as well as education, experiences and the environment have an effect on the mind.

We can alter attitudes of our mind. Mental processes are addictive. Psychologists relate mental processes with external observable behaviours such as body language, emotions, and traits.

Thus the eyes and smile are windows to a person's mind. Happiness results from satisfying our senses and expectations.

Peacefulness is an outcome of stilling or satiating all attributes of the mind. Some consider the mind as our sixth sense, that enables awareness of self and the world.

World religions and cultures accord special significance to the mind. Soul, spirit, non-self, unconsciousness, and universal energy are used either interchangeably, distinctly, or interacting with the mind. Some doctrines link them to beyond-life scenarios.

Guided meditation, mastering of the senses, devotion, rituals, and faith are touted as methods to comprehend them. Fortune tellers, astrologers, healers and mentalists thrive on different notions of the mind. They associate Zodiac signs with personality. Philosophers argue three hypotheses. According to one doctrine, the mind exists independently of the brain. Another doctrine says that only non-physical mental phenomena exist.

Others attribute to the brain physical characteristics, and to the mind no form, colour, location or any other physical characteristics.

Mind is akin to neuronal processes of the brain. Scientists leave the realms of soul, non-self and spirit to the beliefs of people.

They focus on the biological basis of the mind. They consider the mind as the product of the body's nervous system, which includes the brain and spinal cord, hormones and innate genes.

The nervous system comprises billions of interconnected living nerve cells or neurons. Electrochemical signals in synchronized waves through complex neural networks produce mind attributes.

Scientists prefer quantitative and objective measurement of mental processes over traditional qualitative descriptions.

Advanced imaging techniques are employed to understand the nerve circuitry differences between healthy individuals and those suffering from mental disorders.

Such knowledge enabled the design of brain implants to restore motor functions in paralyzed patients.

The author collaborates with the Singapore Institute for Neurotechnology (Sinapse) and designs biomaterials to regenerate brain and nervous system tissues, and to read mind signals.

Mind related innovations are in an embryonic stage. AI can only emulate limited aspects of our highly developed minds. Thus AI cannot entirely replace humans.

Will manufactured brains and artificial minds in the future be far-fetched and controversial or useful to treat damaged or diseased brains and minds?

Responsible innovations will enable us to precisely understand the cause and effect relationships of the mind. At that stage our comprehension of ourselves and nature will evolve.

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