Subhash Kak: 'It is wrong to assume that consciousness is just a computation'

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Subhash Kak, who was recently awarded the Padma Shri for science & engineering-technology, says India needs to move from rote learning to critical thinking. Each generation needs to reinvent itself, says the Regents professor emeritus, Oklahoma State University, US, whose research covers the fields of neural networks, cryptography and quantum computing.

Kak, who has written 20 books, including six books of poems, says what sets humans apart from intelligent machines is awareness, and it is "wrong to assume that consciousness is just a computation".

"My research has led me through various pathways, some of which touch on ancient wisdoms and others on modern science," writes Kak, who is also a Vedic scholar, in his book The Circle Of Memory: An Autobiography (2016).

In an email interview, Kak, who is on the Prime Minister's science, technology and innovation advisory council, says: "As a scientist, I have worked on the problems of foundations and I took the same inquisitiveness to explore the Vedic world and I discovered that at

its heart it is deeply scientific. It speaks of the objective sciences, like physics, chemistry, medicine and so on, and a separate science of consciousness." He says that while ancient Indians did not clone babies, they did have the most advanced logic and mathematics of their time. Edited excerpts:

Are we entering an inflection point, where machines will be able to take decisions and self-learn? In that context, what will the future look like?

Machines are already taking decisions in pattern-recognition applications, such as machine trading and auto-pilot flying an aeroplane. They can also self-learn once the parameters of the application have been defined. Indeed, AlphaGo, the computer that defeated the world champion at Go, a strategy game more complex than chess, honed its game by playing against itself.

What is changing now is the breadth and scope of applications, like cars that self-drive on crowded roads. Since computers are more reliable than humans, it is inevitable that their use will only increase. There are also unprecedented dangers of thought control using AI technologies. For instance, AI-designed bots can spread false stories and do it in a manner that pushes out real news, and public opinion can be manipulated.

A lot of jobs will become redundant. What kind of churning would this involve in the education system, especially in India?

India faces a huge challenge regarding the quality of its education. India has some excellent schools and colleges but not enough of them, so there is a huge skills shortfall. The other aspect of this is how students are taught in classrooms. The curriculum needs to

move away from rote learning to critical thinking. Educators have long been aware of it but not enough has been done to bring about qualitative change. Education is of paramount importance to deal with the AI challenge because the nation will have to create new kinds of jobs in place of others that have become redundant due to automation technology.

Countries like South Korea and Japan are said to be the most prepared for automation. How do you think India fares in this regard?

Yes, South Korea and Japan, as well as China, are far ahead of India in the field of automation. But given that the Indian economy has momentum at this time, the gap need not be too much of a handicap if right investments are made in AI technologies. India also has the advantage that much more needs to be done here to fix its infrastructure, so (there is) potentially more work for local companies.

Will future computers be able to mimic the human mind?

Computers will be able to emulate human cognition, which means that they will be able to match and surpass routine human cognitive operations. But in my view they will not be able to mimic the human mind. That is, they will not have awareness.

From an economic point of view, the absence of awareness does not change the picture related to jobs loss, but it makes AI machines a bit less of an existential threat. If machines were to become aware, they would surely do away with humans. Although I believe this will not happen, there are many scientists and engineers who are sure machines will become conscious. They are wrong to assume that consciousness is just a computation.