Commentary

Reflections On The Coming Era of Artificial Intelligence

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Summary: The quest of every species in the attempt to overcome its bounds and limits to preserve itself for eternity has existed from the very beginning. If one were to analyse all the activity of any sort of life, one may suggest that these efforts point to one primary scope: 'To get an egg from an egg'.

From the Darwinian theory of evolution it may arise that this self-preservation not only propagates the species itself, but also probably spawns other species if part of that population over time is separated from the main one and thus could it could become different. However, as organisms became more complex and sophisticated, the physical propagation through genes in the gene pool from body to body and generation to generation via sperms or eggs was not enough. As an addendum, these complex organisms utilised virtual propagation in the form of memes or "mental patterns" (Dawkins 1976). Memes in theory, virtually propagated themselves in the meme pool by leaping from brain to brain via a process which in the broad sense is called imitation.

Meme virtual propagation is seen as instinct and/or social behaviour in animals, but in humans, this is seen in many other ways including ideas, tunes, jingles, quotes and theories. However, in the process of the evolution of these memes, an adaptation occurred. The desperate search of these memes to self-propagate better and to expand more with greater efficiency has resulted in the birth of a better medium to host them- The Machine. Thus the birth of Artificial Intelligence.

Intelligence may be defined as " the mental ability to learn and understand things and information that is relatively of value" while Artificial means "something not originating naturally". While the individual definitions of these words is plausible, their meaning does change slightly when they are fused together. Of course, the general trend is to define something artificial, as being something man-made. But this does not necessarily mean that it is not natural. Artificial intelligence is the new natural process utilised by memes to ensure their self-replication.

As described by Russell and Norvig (1995) this virtual meme sowing, propagation, and expansion includes the imitation of humans as they think and as they act, and, on a more noble level, the evolution of rational thoughts and acts in the absolute, ideal way (assuming humans do not adopt this absolute, ideal way of thinking and acting).

As expected, there are many ways of going about artificial intelligence. Neuromorphic systems, expert systems, fuzzy systems, statistical pattern recognition, machine learning and computational learning are to mention a few. Although it is practically impossible to predict how AI will affect the future, clouded insights to what it may achieve can be speculated upon. The potential of intelligent machines is enormous. Human resources are currently the most precious resource in our evolution. Imagine having a machine that is much better than a human: more efficient, more precise, faster, safer, more intelligent better at communication and interaction with others of its kind... the improvements on humans are innumerable. A machine can be defined as "any system or device that performs or assists in the performance of a human task". Machines, as have always been, are extensions of humans. They are our tools as extensions of our limbs, and now, with AI, they will be our tools as extensions to our brain.

But many humans are sceptical and scared; and they have reason to be so. What if AI is used as a weapon against human interests in general? What if machines become self-aware and just take over? Is AI nature's way of disposing of us? Are we self-destructive beings? Are we going to provide the world with the greatest mass extinction of life, as we know it, dawning with a new era of a new life form? Could be. But the evolution of AI cannot be stopped. No organism ever managed to stop evolution, and humans are unlikely to be an exception.

Man was always scared of his own power to destroy himself. Yet it is frequently ignored, that if man is capable of creating machines that are more intelligent than himself, it is equally possible that man is capable of increasing his own intelligence using artificial techniques.

The only fundamental criterion is: Not to create the monster before creating its cage.

Artificial Intelligence is extremely revolutionary, especially if it is combined with other cutting-edge

technologies. Nanotechnology (the study of the synthesis of molecular-based machines) is opening doors to new concepts that up to a few years ago were only talked about in science fiction. Indeed nanomachines may perform tasks, which are performed by present larger machines. Instead of having big lumps of molecules (man's current machine) working on other big erratic lumps of molecules (what the machine is working on), nanobots, being so small, may work on molecules one at a time assembling perfect precision tools and extremely fast nanocircuits. Indeed, in the limit, these extremely small machines may be used not only to assemble extremely small tools but could also be used to assemble other nanomachines like themselves. In other words, the nano-assemblers self-replicate. Combining nanotechnology with artificial intelligence gives man the intelligent nanomachine, and the intelligent nanomachine gives man the key to a lock that he could never open before; the key to the mystery of life.

Artificial intelligence together with nanotechnology will totally change life the way man knows it. Intelligent nanomachines could be used to enter cells and repair them, marking an end to disease and in the extreme, an end to aging. They could be used to manipulate molecules to manufacture perfect materials, which are light and extremely strong (for example manufacturing diamond to use as girders, car bodies and plane fuselages). They could be used to create natural resources from very common elements. They may be used to eliminate the environmental problems we are currently suffering from by disassembling (using disassemblers rather than assemblers) the poisonous molecules and transforming them to useful compounds. The possibilities are infinite.

AI and nanotechnology may provide a vertical solution to aging by literally stopping it (as mentioned above). But AI may also provide a lateral way of increasing the time that man lives. Combining AI with neuroanatomy and psychology may result in a machine (or agent) in the form of a sophisticated robot that directly communicates with a person's brain. Thus, it could be the case that a particular intelligent machine would interact directly with a human's mind, would store that person's characteristics (clone his memes) and be a mechanical representation of the person. The machine would then go on and perform the tasks that that person hates doing (such as going to work) and later on, would reconnect and re-upload (to the person's brain), the information gathered by the machine. In this way, the machine would do the work instead of the person, yet still in the particular way that that man would have done the work had he gone to do it personally. Moreover, the person would still know exactly what would have happened at work after the re-upload and would be confident enough that

whatever the machine would have done was exactly what he would have done in exactly the same way he would have done it. Thus the intelligent agent virtually would give the opportunity to the person, of being at two places at the same time (hence a lateral way of increasing time). Naturally, many agents could be employed by one person allowing him to do only the things that he would enjoy doing most, whilst using his talents to the full (by means of the agent) in his contribution to humanity. Many other applications of such an agent may spawn from this idea such as the machine version of dead people (provided eternal life through nanotechnology is not achieved) the experience of people living as other forms of life (provided the agents are manufactured not only as humanoids but also as replicas of animals) and an addition of memory or computational power of the human brain.

Indeed the doors that artificial intelligence would open to the future are innumerable, though many still think that some doors should remain shut. Yet the insatiable quest of man and of all living things (man being their dominator) to find means of self-preservation, of gaining the unlimited, of spreading beyond all bounds and of reaching the eternal was, is, and will always be, an obsession providing an unstoppable driving force. Artificial intelligence is currently one of these means, and once man has insights into it, it will grow, no matter how much it is condemned, no matter how much it is prohibited, no matter how many difficulties are in its course. For once man can dream it, man will do it, and where there is a will (and the will there is) there is a way. Remember Jules Verne?

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