Knowledge vs. intelligence amid the hype and hysteria over AI

AI accomplishments don't qualify as intelligent, but rather as high-performance data processing

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The current infatuation with artificial intelligence is indicative of the level of competence of those who are in the headlights of a fast-moving, still unidentified, flying object.

The headlines range from "Mitigating the risk of extinction from AI" (through the European Commission) to promising a world free of disease (cancer, in particular), and unlimited prosperity. No more need for lawyers (thank God!), no more need for doctors, not to say truck drivers, and Hollywood screenwriters.

AI is all over, most of the time in stealth mode – and pretty successful in every form of surveillance (there are so many).

MIT Sloan Executive Education bluntly declares: "The hype surrounding innovative AI technologies is here to stay. Make sure you are able to capitalize on it." Contrast this to: "Bizarre AI-generated products are in stores. Here is how to avoid them (Washington Post, Sept. 14, 2023). There are already experts on generative AI, as well as on deep fakes. But copying original art or plagiarizing a book is not the same as impersonating, even playing God.

Capitalizing on something that might extinguish humankind – 67% of those active in AI believe that – or might lead to experiencing paradise on Earth – demagogues as AI experts – goes beyond petty thievery.

The new AI ventures capitalize in the range of trillions of dollars – unprecedented in every respect. And this, despite the fact that the wonder is the rehash at large scale, of the Emperor's New Clothes.

Moreover, as chief AI scientist at Meta, Yann LeCun, put it: Humans don't need to learn from a trillion words to reach intelligence. Think children if nothing else comes to mind.

The "weavers" of the suit that's supposed to make the king invisible to those stupid or ignorant are astute computer geeks riding the wave of large, very large, extremely large, hyper-large data processing. Their view of intelligence, which they are supposed to deliver in artificial form, is devoid of knowledge. In fact, science was replaced by measuring without understanding the data it generates.

The focus is on quantifying, i.e., attaching numbers to everything. This is the obsession with data – to the detriment of understanding the meaning of what is measured. The absence of scientific foundation explains why their aim is what is called "artificial general intelligence" (AGI).

With the magic AGI – "we are so close to it!," goes the claim – no more only instructions for winning in chess or Go, for interpreting X-rays, for autonomous driving or piloting, for writing poetry, or for solving math problems. Rather the attractive illusion of intelligence that can do everything: describe protein folding, cure toenail fungus, speculate in the stock market, replace, advise governments, perform surgery, and most importantly, save humankind. This is where it hurts! Saving at what cost? If this is not a Faustian bargain I know of none that would qualify.

Let's not forget that Howard Gardner in 1983 distinguished and documented a variety of types of "intelligence" in his "Frames of Mind: The Theory of Multiple Intelligences." Empirical observation of human performance suggests that the intelligence of a football player, a soprano, a painter, an investor, a cobbler (or whoever makes shoes today employing robots) is different from that of a programmer.

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Actually, the science, whose absence from AI we should deplore, instead of wishing to regulate it, is to a large extent available. In short: two mathematicians, Hilbert and Ackermann, formulated the so-called Entscheidunsproblem: Is there a machine that can decide whether a particular mathematical proof is right or wrong? Two of the scientific geniuses of our time came up with answers.

Turing demonstrated the impossibility of building such a machine: No mechanical procedure could validate a mathematical proof. This in itself should inform those who focus on GENERAL intelligence – the goal of AGI – that it is, by its nature, a chimera. If one application – deciding on a mathematical proof is not achievable – forget the goal of doing everything intelligently.

But there is also Gödel: There are undecidable entities. This means that we cannot describe them completely and consistently (i.e., without contradictions). A general intelligence would have to be decidable. This is as impossible as the squaring of the circle, or as trisecting an angle or doubling a cube, or representing the square root of 2 as a rational fraction a/b. No matter what new technologies are developed.

Are partial artificial intelligence applications possible? Of course, and some are convincing. We live with them. Elon Musk announced a trial of Neuralink for treating those affected by quadriplegia (as the late Steven Hawking famously was). But even in success there is a lot to be concerned about.

Within the brute-force algorithmic computation model through which AI is carried out, ever greater amounts of data are processed. It takes a lot of energy to do it. So far, the makers of more powerful computation engines – such as Nvidia – are those that capitalize big on AI. The superb technological performance of machine learning is, in the absence of knowledge about intelligence, doomed to consume more and more energy.

To win a game of chess at the expense of energy that a small town consumes in a week is unsustainable. A Chat GPT inquiry – or, for that matter, Google's Bard, or Microsoft's Bing – costs ridiculously high amounts of resources, as Sajjad Moazeni of the University of Washington recently calculated. No living being will consume more energy than what it takes to get what it needs to survive. Intelligence, in the form of anticipatory action, guides the living in all its known forms of existence, in acquiring what it takes to prosper. Human beings go beyond survival: our goal is to prosper. Unfortunately, sometimes at the expense of others. Or by borrowing from the future.

With all this in mind, I formulated a precise criterion for defining intelligence: Artificial entities could justifiably claim intelligence if, in executing a task, they would use as much energy or less, and as much data or less, than a living entity performing the same task.

As spectacular as accomplishments described as AI are, none qualifies as intelligent, but rather as high-performance data processing – sometimes called brute force computation.

A start-up trying not to process even more data at no matter how high a price, but rather to define the minimum of data necessary to achieve a desired goal, will reflect awareness of sustainability. Such awareness is greatly missing in the hype of our days.

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