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Intelligence Reimagined: Interrogating the Nature of Intelligence in AI

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Course: ICOM 5015, Section 001D
Date: February 21, 2024

Humanity has been in constant technological advances, many of which seek to replicate natural or biological processes in our world. By the 1950s, different professionals gave birth to the term artificial intelligence. Since then, technology has been growing around creating an entity that has intelligence, but artificially, that is, it does not contain biological elements. However, to this day the meaning of intelligence has been debated from different professions and points of view. The discussion about whether artificial intelligence can be considered intelligence in general has generated extensive discussion and reflection in different professions such as philosophy, psychology, and neuroscience. In this context, it is essential to explore the diverse opinions and perspectives that exist on the nature of intelligence to determine whether artificial intelligence meets this broad and important concept.

What is intelligence?

The concept of intelligence has been debated in many aspects and a concrete definition has not been provided. This is because people still debate intelligence from psychology, philosophy, neuroscience, and biology, among other professions. However, according to Annika Wender, intelligence is defined as "the ability to solve complex problems or make decisions with outcomes benefiting the actor…[12]". Likewise, according to the Encyclopedia Britannica, intelligence is defined as a "mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts.[10]" Therefore, a person can be considered intelligent if he can learn from his experiences and adapt to new situations. However, there is an aspect that is mentioned that the ability to understand abstract concepts is very important. However, how does this understanding of intelligence translate to the field of artificial intelligence?

What is artificial intelligence?

According to International Business Machine, artificial intelligence can be defined as "a field, which combines computer science and robust datasets, to enable problem-solving.[15]" On the other hand, Alan Turing mentioned that intelligence must act like a human and asked himself if machines could think for themselves. This is aimed at a term known as Artificial General Intelligence, which Amazon Web Services defines as "is a field of theoretical AI research that attempts to create software with human-like intelligence and the ability to self-teach.[13]" It is important to recognize that this term differentiates artificial intelligence itself since an artificial intelligence with AGI tends to learn from itself even when it was not programmed or created to do

so. In this context, artificial intelligence is presented as an attempt to replicate human cognitive abilities through computer systems. When comparing general intelligence with artificial general intelligence, the fundamental question arises whether machines can one day match the depth of human thought.

General Intelligence

General intelligence in humans is that factor that connects the intelligence of the human being to perform different skills. This represents a fundamental difference between artificial intelligence and human intelligence. Artificial general intelligence seeks to imitate human behavior, while a person has the g-factor ability that allows him to perform well in several areas [16]. In this aspect, I consider that artificial intelligence cannot be considered intelligence because, although it can carry out various instructions, it always seeks to replicate that of a person. On the other hand, general artificial intelligence also seeks to teach itself, so it partially meets one of the definitions of intelligence, because, although intelligence requires continuous learning, it is defined more as learning from our experiences. It should be noted that artificial intelligence with machine learning can accept learning from its environment and in this way learn and execute its algorithms and "tasks" much faster. However, human experiences can be defined as "The human experience encompasses the entirety of an individual's interactions, emotions, perceptions, and thoughts throughout their life journey. [6]" As expected, an artificial intelligence is not yet capable of feeling emotions or having feelings, because the analysis of its environment will be completely rational. Therefore, I consider that artificial intelligence cannot be considered intelligence, since it does not learn from its experiences, but from its surroundings. Likewise, because the concept of AGI tends to want to imitate human intelligence, I think that for this reason it cannot be considered as an intelligence that was created by humans, because human intelligence does not aspire to itself, but to others things.

Intelligence for Complex Problems

The first definition that was mentioned was that intelligence is the ability to solve complex problems. Human beings have the capacity required to solve complex problems in different aspects such as science, psychology, politics, and creativity. However, in the article Human – Versus Artificial Intelligence it is mentioned that "the conduction velocity of nerves proceeds with a speed of at most 120 m/s, which is extremely slow in the time scale of computers. [13]" Therefore, artificial intelligence has greater computational capacity and therefore can result in a greater ability

to solve complex problems than those of humans. Likewise, artificial intelligence can be created to solve different complex problems, since there are different types of artificial intelligence. In addition to this, artificial intelligence has no problem updating itself with the latest data. According to the article "This capacity for rapid, structural expansion and immediate improvement hardly applies to people. [13]" Therefore, it becomes more complex for people to stay updated on the fastest or safest methods to solve something or apply it to something. Without a doubt, I consider that human intelligence considers many more factors and that it has a biological capacity that can hardly be increased, but that does not mean that it is inferior to that of artificial intelligence. On the other hand, artificial intelligence concerning this single definition could be considered as an intelligence that was created by humans.

Intelligence and Abstract Concepts

This structural capacity that artificial intelligence presents contrasts with its ability to understand abstract concepts. The human being "…have the unique ability to construct abstract concepts that have no anchor in the physical world… [5]" Concepts such as justice, forgiveness, and ethics are abstract concepts that now only the human being is capable of understanding. According to Mariana Bolognesi and Gerard Steen, "Our ability to use and understand abstract concepts is one of the most intriguing faculties of human cognition. [16]" One of the definitions proposed to define intelligence talks about the fact of understanding abstract concepts. This has been very important for the history of our world, because thanks to our ability to understand these issues, advances have been made in all the branches that exist today. On the other hand, Ralf Grötker brings us in his review of a book that "AI, Russell explains, cannot perform abstract reasoning. [9]" That is, with the technology that exists today, artificial intelligence is not yet capable of understanding those basic concepts on which human life is based, as previously mentioned. It does not apply to only concepts that do not have a physical representation in our world. Artificial intelligence according to CONTEC, "AI-based image recognition is a technology that uses AI to identify written characters, human faces, objects, and other information in images. [4]" This means that artificial intelligence is only capable of recognizing objects and people's faces, among other things. However, according to Brown University, artificial intelligence "…are trained on massive sets of data, such as ImageNet, which has over a million images pulled from the web organized into thousands of object categories. [18]" So, AI do not identify images, but rather use data from them and match them with other images in their databases. Contrary to this, human

beings are capable of not only identifying images that are presented to them but are also capable of understanding abstract art. According to an article, “Some people feel emotions when they look at abstract art. [3]” So people are not only able to understand images within complex patterns of art and painting, but they can also generate other abstract concepts such as feelings. A person can feel different emotions when reacting to an abstract painting. Therefore, I think that artificial intelligence cannot be considered intelligence because it is not capable of understanding concepts that are not tied to the physical world.

Knowledge vs Data

According to Grötker, Russel argues that artificial intelligence “cannot build complex knowledge structures from text; nor can they answer questions that require extensive chains of reasoning with information from multiple sources. [9]” That is, this type of intelligence cannot understand data, but rather manipulates the collected data according to a series of instructions in its systems or codes. Although artificial intelligence has access to extensive databases, it cannot understand their meaning, it will treat them in a crude and rational way. In certain aspects, when it comes to having problems, computations will be more effective, since the data is processed without any inclination or opinion that the person may have. In contrast, human beings can think. According to psychologist Tim Schneider, “Most would agree that thinking is an active process through which individuals construct knowledge. [19]” The data that AI learns from only creates shortcuts for future interpretations and optimizes resources for other types of data that they are required to use. The human brain, on the other hand, uses data and with due thought process, it becomes knowledge. I consider that the process that a person goes through is greater since thinking involves all the experiences and emotions that a person may have. Without a doubt, this is reflected in the person's intelligence, since it uses traits that only occur in some living organisms. In short, artificial intelligence, although it can learn more quickly and to a greater extent, is still not capable of developing critical thinking like humans do and this is an important characteristic of human intelligence.

Conclusion

The discussion about whether artificial intelligence can be considered an intelligence created like man does not contain a definitive answer. Although artificial intelligence shows significant advances in computational capacity and the management of large amounts of data, it still shows signs of delay in many other aspects of what intelligence is. Artificial intelligence

cannot yet understand abstract data that is not tied to a physical object. Likewise, it lacks the capacity for critical reasoning and cannot learn from his experiences. This is because it lacks emotional depth and the ability to construct thoughts on its own, whose traits are present in living organisms, but more so in people. Artificial intelligence cannot generate knowledge either, as I believe it is a faculty only of humans. Ultimately, the exploration and understanding of various perspectives on the nature of artificial intelligence will be essential for it to achieve the concept of AGI. In my opinion, artificial intelligence cannot be considered intelligence due to the previous reasons, but beyond that because it is a device that is created by human beings and we are still very far from what Alan Turing once asked himself, if machines can think for themselves. However, I think that artificial intelligence in the future could achieve the behavior of intelligence in general or be a type of intelligence unique to itself.

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