

Alex J. Strubbe Martínez

University of Puerto Rico at Mayagüez

Prof. Fernando Vega Rios

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Is AI real intelligence that is Artificial?

In recent years, artificial intelligence (AI) has seamlessly integrated into our daily lives and routines, permeating various devices such as cellphones and automotive vehicles, all of which are now equipped with AI capabilities to enhance user experiences. While some argue that AI has the potential to replace essential human workers with machines possessing a semblance of "intelligence," this debate has sparked discussions about the nature of AI intelligence. This essay will delve into the topic of AI and its intelligence, exploring whether the intelligence exhibited by AI is truly artificial or possesses genuine cognitive abilities.

To comprehend the topic at hand, it is essential to grasp the definition of "artificial." According to Merriam-Webster, it refers to something humanly contrived, often modeled after a natural prototype [3]. To illustrate this concept further, we can draw parallels with the use of a prosthesis. When a human or animal loses a natural limb due to unforeseen circumstances, a prosthesis is utilized to replace the missing component, aiming to restore functionality and enable the user to function as closely as possible to their previous state. In a similar vein, AI endeavors to mimic human intelligence or function in a comparable manner. However, it is evident that this is not entirely the case at present, a point we will delve into later.

Before delving deeper, it is imperative to establish a clear understanding of intelligence. According to the Merriam-Webster dictionary, it is defined as the ability to learn, understand, or navigate novel or challenging situations [2]. Another pertinent definition, which we will adopt for this paper, is "the ability to apply knowledge to manipulate one's environment or engage in abstract thinking, as measured by objective criteria" [2]. Both definitions encapsulate the essence of intelligence, prompting us to consider whether AI truly embodies these attributes.

Having established these definitions, we can now delve into the topic. It is evident that AI exhibits intelligence in its own right, but it lacks the capability of self-thought to the extent that humans possess. Stuart A. Kauffman and Andrea Roli, in their work "What is consciousness? Artificial intelligence, real intelligence, quantum mind and qualia," argue that Artificial General Intelligence falls short of completing the Universal Turing Test because it struggles to identify novel affordances [1]. This assertion might seem perplexing, especially considering the existence of chatbots that can simulate human-like responses. However, despite their ability to mimic human behavior to some extent, these AI systems often fail to truly understand human intentions due to their detachment from our world [1].

An annual competition called the Loebner Prize is designed to identify the AI program that comes closest to resembling a human being [4]. This competition, inspired by the Turing Test, serves as a crucial benchmark for evaluating AI's capacity to replicate human intelligence [4]. However, it is worth noting that no machine has managed to secure first or second place in this competition thus far [4]. For instance, Mitsuku, a multiple-time winner of the Loebner Prize, faced a significant challenge when asked a seemingly simple question: "If we take each other's hand, whose hand am I holding then?" Mitsuku's

response, "I will be holding yours and you will be holding mine. What's with the dumb questions?" puzzled the judges [4]. When questioned further about why the question was deemed "dumb," the bot malfunctioned [4]. This incident highlighted a glaring limitation of AI systems—despite their impressive capabilities, they can still falter when faced with basic queries that a child could easily answer [4]. This incident serves as a stark reminder of the considerable distance we have yet to traverse before achieving genuine artificial intelligence. In our studies, we have come to understand that these machines are trained to produce such responses, akin to how a dog is trained to perform tricks. However, it is important to recognize that this comparison between human intelligence and artificial intelligence is fundamentally incomparable. While AI systems can mimic certain aspects of human behavior and cognition, they still lack the depth, complexity, and nuanced understanding inherent in human intelligence. Human intelligence encompasses not only the ability to respond to stimuli but also to comprehend, reason, learn, and adapt in a dynamic and ever-changing environment [1]. Achieving true artificial intelligence—one that rivals human intelligence in all its facets—remains a formidable challenge that requires breakthroughs in fields such as neuroscience, cognitive science, and computer science. Thus, while AI has made remarkable strides, it is clear that we are only scratching the surface of what is possible in the realm of intelligence.

To ensure that machines, such as AI, can pass the Universal Turing Test, they must be capable of finding and creating new affordances [4]. This becomes evident through interactions with AI; some prompts may lead them to provide unusual or unexpected answers. This is because they lack the capacity for self-thought and often rely on the training data they have been exposed to, unlike human intelligence. As humans, we do

indeed learn from the data and experiences provided by our caretakers and interactions with others, but we also possess the capacity to develop new understandings and generate our own ideas and opinions—capabilities that AI currently lacks. An example is provided in the paper by Kaufmann and Roli, which illustrates creating new affordances. They express that there are countless ways to use different items; for example, a motor block [1]. They further explain that for a robot to use a motor block in various ways, it requires acquiring information on the causal features of the engine block, something that does not come naturally to the robot [1]. Although it seems plausible, they ultimately conclude that "even an embodied UTM (Universal Turing Machine) can rarely find a concatenated set of novel affordances" [1]. This limitation arises because, in order for a robot to successfully generate novel ways to utilize a motor block or any item, it must explore an infinite space of possibilities to discover useful and non-deducible applications [1].

This being said, there is still a long way for AI to come close to human intelligence. One of the most poignant statements reinforcing this perspective comes from the paper used to support this essay: "AI currently is wonderful, but syntactic and algorithmic. We are not merely syntactic and algorithmic... We, with our minds, play an active role in evolution. The complexity of mind and coordinated behaviors can have evolved, and diversified with and furthered, the complexity of life" [1]. This statement serves as a powerful conclusion, highlighting the unique nature of human intelligence and its integral role in the evolution of life.

It is evident that AI is unlikely to replace humans in the near future, as there is much more to intelligence than what AI currently exhibits. We can conclude that Artificial Intelligence is merely a trained algorithm, incapable of generating its own novel

affordances. Just as a prosthetic limb cannot fully replace an original limb, AI cannot replicate true human intelligence. It remains an imitation, lacking the depth and complexity inherent in genuine intelligence.

References:

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