

# The Answer of the Question „Is Artificial Intelligence Artificial?“

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## ABSTRACT

*The report provides an opportunity for educational enrichment by offering essential information and analysis on one of the most important and exciting topics in contemporary science and technology. The choice to write about this topic is motivated by its relevance, complexity, and significance for modern society and technological development.*

*Keywords: artificial intelligence (AI), history of AI, types of AI, risks and ethical issues.*

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## INTRODUCTION

Technological advancements in the field of artificial intelligence (AI) are of great interest to both specialists and society. The question of whether AI is “real” or merely “artificial” captures the attention of many at a time when it increasingly impacts our lives. This topic offers the opportunity to discuss a wide range of aspects, including technical, ethical, social, and legal issues that are essential for understanding and applying AI in modern society. Examining the challenges faced by AI allows us to better understand the potential risks and opportunities associated with its development and use.

## EXPERIMENTAL

The creation of the report on artificial intelligence was accomplished using various methods, tools, and sources, which include:

- *Research and analysis:* To gather information

for the report, current sources such as scientific articles, publications in the field of technology, university and professional organization websites, as well as news and reference materials, were researched.

- *Analytical skills:* Analytical skills were applied to understand the impact and significance of the different aspects of the artificial intelligence topic during the information analysis.
- *Information synthesis:* The collected information was synthesized and organized into a structured and logical report, which includes an introduction, a detailed exposition of the topic, an analysis of challenges, and a conclusion.
- *Consultations and reviews:* The report was reviewed and commented on by other individuals, which helped refine the content and ensure the accuracy and quality of the presented information.

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## **RESULTS AND DISCUSSION**

The term “algorithm” originates from the name of Abu Ja’far Muhammad ibn Musa al-Khwarizmi, an Arab mathematician, who around 820 AD wrote a scientific treatise on how to represent (record) numbers in the decimal system and how to calculate with these representations. Al-Khwarizmi’s work was translated into Latin in medieval Europe at the beginning of the 12th century, but the spread of the “art of calculation” and the era of manual and mechanized computation (thanks to the activities of universities of the time) began only in the 16th century. Later, the concept was expanded - known computational procedures from earlier times, including those discovered by mathematics, began to be considered as algorithms [1].

AI is a field of computer science that deals with the development of systems and programs that can mimic human intelligence. It has become a key player in the technological revolution, driving changes in various fields such as medicine, the automotive industry, education, and others. This multi-layered advancement reflects humanity’s aspiration to create automated intelligent systems capable of performing complex tasks and facilitating daily life. Regardless of whether we view it as “artificial” or not, the fact remains that AI is developing rapidly and entering various aspects of our lives. But how exactly would we define the term “artificial” in the context of “artificial intelligence”?

The term “artificial” is often associated with the creation of something made by humans and not natural or organic. In this sense, AI can be considered artificial because it is a product of human ingenuity and engineering. However, the question of how truly “artificial” the created “intelligence” is deepening the debates around AI [2].

### **Artificial intelligence in the context of the human brain**

AI is capable of solving complex tasks that

were previously considered possible only with the help of the human brain. It can analyze large volumes of data, identify patterns, learn from its own experience, and make predictions about the future. This level of “intelligence” can blur the line between what we consider “natural” intelligence and what is artificially created.

- It is important to note that despite significant advancements in AI, it still lacks the same intuition, creativity, and empathy inherent to the human brain. In this sense, no matter how “intelligent” it may appear, AI remains a product of programming and algorithms created by humans.

- Comparing AI to the human brain raises questions about the nature of intelligence. Although AI can create an impression of understanding and adaptation, it is far from the real complexity of human thought and emotions. Creating truly intelligent machines capable of consciousness and awareness of the world remains an extremely complex challenge [3].

### **Technological achievements and limitations**

The progress in AI is impressive, with the creation of systems such as neural networks that can recognize images and perform complex tasks. However, these technologies are not without limitations. Transparency, ethical dilemmas, and questions of responsibility continue to be challenges that need to be addressed [4].

### **What is artificial intelligence?**

AI is a field of computer science that aims to create systems capable of performing tasks that require intelligence, such as learning, problem-solving, and decision-making. These systems use algorithms, data, and modeling to behave like the human brain.

Reality or Illusion: AI can create the illusion of intelligence, but at its core, it consists of programs operating within set algorithms and rules. Despite the significant technological advancements, AI still lacks true understanding and awareness of

the world akin to the human brain.

**Challenges:** The challenges facing AI are diverse and require integrated efforts from society, industry, and governments [5]. Overcoming these challenges requires not only technological innovations but also ethical and social awareness regarding the impact and consequences of AI development [6].

**Ethical issues:** The use of AI raises serious ethical questions regarding privacy, security, and potential negative consequences. Machine learning and decision-making algorithms can be subject to bias and unfairness. The transparency of algorithms and the ability to explain decisions made by AI systems are also crucial, especially in areas such as medicine and justice [7, 8].

**Transparency and responsibility:** Decisions made by AI systems are often difficult to understand and explain, which can pose challenges for addressing issues related to legal responsibility.

**Safety:** The increasing risk of cyber-attacks is a significant concern.

**Employment and Economic Impacts:** With the development of AI, some jobs will likely be replaced by automated systems, putting pressure on employment in certain sectors. At the same time, new job opportunities and innovations may arise because of AI implementation [9].

### **The emergence and development of artificial intelligence over the years**

Key moments in the history of AI development:

**Antiquity:** The idea of creating mechanisms that mimic or are considered intelligent has appeared in various cultures throughout history. For example, in ancient Greek mythology, there are stories about Talos, a giant bronze man who guarded the island from pirates and navigators [10].

**Middle ages and renaissance:** During this period, mechanical devices and automata emerged, serving as entertainment and showing an interest in creating automatic operating

systems.

**Early modern period:** In the 17th and 18th centuries, mechanical devices such as Charles Babbage's Analytical Engine were developed, which is considered a precursor to the modern computer [11].

**20th Century:** The idea of AI developed into a scientific discipline during the 20th century, with key highlights from this period include:

- 1950: Alan Turing formulated the Turing test, the first attempt to define "intelligent behavior" in a machine [12].
- 1956: The historic conference at Dartmouth College took place, where the term "artificial intelligence" was officially introduced. Various aspects of developing computer programs that could simulate human thinking were discussed [13].
- Early 1960s: The programming language LISP was developed, becoming a common language for AI programming [14].
- 1966: The program ELIZA was created, simulating a conversation with a psychotherapist [15].
- 1973: Marvin Minsky and Seymour Papert developed the sixth level of the program SHRDLU, which could manipulate blocks in a virtual world [16].
- 1970s: Due to overly optimistic and somewhat unjustified expectations from the US and British governments, research in the field of AI was interrupted for some time. This period became known as the "AI Winter." Enthusiasm was lost, and no one wanted to finance such research. This occurred around 1974 [17].
- Late 1980s and Early 1990s: The second "AI Winter" arrived after a series of financial losses. The failure of expert systems and hardware companies struggling against the desktop computers developed by Apple and IBM again led to a decline in interest in AI [13].
- 1997: IBM's Deep Blue won a match against the world chess champion Garry Kasparov [18].

## **Types of artificial intelligence**

Mariana Todorova outlines existing concepts for the three forms of AI. Depending on their application and functionality, different types of artificial intelligence can be distinguished [19]. Here are some of them:

### **1. Weak artificial intelligence (Weak AI)**

Also called “narrow artificial intelligence.” This type of AI is capable of performing specific tasks or solving specific problems but does not possess general intelligence or self-awareness. Examples include voice recognition systems, computer games with opponents that simulate human behavior, etc.

### **2. Strong artificial intelligence (Strong AI)**

Also known as “general artificial intelligence.” This type of AI would be capable of performing tasks characteristic of human intelligence. Strong AI is still a theoretical concept and has not been achieved in its full form.

### **3. Machine learning [20]**

A subset of artificial intelligence that focuses on developing algorithms and models that enable computers to learn from data and experience [21]. Machine learning is a fundamental tool for achieving AI in various fields such as image recognition, natural language processing, forecasting, and many others.

### **4. Neural networks [22]**

Neural networks are a machine learning model inspired by the functioning of the human brain. They consist of a computer system made up of numerous interconnected computational elements called artificial neurons that work together to process information. Neural networks are used for various tasks such as image recognition, speech understanding, time series prediction, and more. They are widely used in different areas and have proven to be a powerful tool for solving complex problems in machine learning and artificial intelligence.

### **5. Expert systems [23]**

Systems that use a knowledge base, rules, and heuristics to solve problems in a specific

domain of expertise, such as medicine, finance, engineering, etc.

### **6. Genetic algorithms [24]**

They use principles of evolution and genetics to solve optimization problems by selecting the best solutions through multiple generations.

These are some of the main types of artificial intelligence. In reality, many of them can be combined and used to solve various tasks and problems [19].

## **Risks and ethical issues**

Currently, there is a global tension between legal and ethical actions regarding the implementation of AI. In this context, ethical frameworks are being developed to address concerns such as accountability, biases in training data, and compliance mechanisms for AI governance.

## **Ethical considerations in education**

Ethical considerations in education involve personalized instruction, data dependency, biases in training data, academic integrity, and creativity. Guidelines developed by organizations like OpenAI and the U.S. Department of Education address broader frameworks for AI ethics in education [25]. The joint MLA-CCCC Task Force on Writing and AI provides recommendations emphasizing academic integrity and support for educators [26].

It is suggested that writing educators should acknowledge that students will experiment with AI-based text-generation tools. This engagement contributes to the formation of localized ethics governing the use of AI in educational settings. Discussions on ethics highlight the need for balancing AI regulation to minimize harm while fostering innovation.

Recommendations for integrating AI in education include:

- Avoid over-reliance on AI.
- Utilizing critical and creative thinking.
- Adapting classroom experiences.

- Promoting transparency, safety, and ethics in AI use [25].

### Risks of AI models

AI models such as GPT-4 or Llama 2 can produce racist and sexist outputs, while image generation models like Midjourney or DALL·E 3 can be used to create inappropriate and harmful content [27]. The use of AI-based tools by terrorists and criminal entities presents significant risks to society and security. Scholars and practitioners are increasingly concerned about the disruptive potential of AI. Companies need effective risk management processes to mitigate these risks to an acceptable level [28].

### Legislative efforts and regulation

In response to these concerns, the EU has become the first legislator in the world to propose a law regulating AI. The goal is to ensure that AI systems respect fundamental rights, safety, and ethical principles, addressing the risks of highly powerful and impactful AI models. The AI Act aims to ensure that Europeans can trust what AI has to offer.

In 2021, the European Commission presented its proposal for the Artificial Intelligence Act, which is currently in the final stages of the

legislative process. In December 2023, a political agreement was reached, and the final text is pending approval. The AI Act ensures that AI systems operating in Europe adhere to stringent ethical and safety standards, promoting trust and accountability in AI technologies [30].

### CONCLUSIONS

The answer to the question “Is artificial intelligence artificial?” is not straightforward. It encompasses multiple aspects, and a definitive answer would require much more thought and discussion. Even if a precise answer does not exist now, we can hope that future technological progress will eventually provide clarity.

Artificial intelligence (AI) continues to be a topic of immense interest and importance, with significant advancements being made regularly. The complexity and multifaceted nature of AI, from its theoretical foundations to its practical applications and ethical considerations, mean that our understanding of it is constantly evolving.

As AI technology develops, so too will our understanding of its nature and implications. It is essential to continue exploring and questioning AI, balancing innovation with ethical responsibility, and preparing for the challenges and opportunities that AI will bring to various aspects of our lives.

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