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THE BEGINNING OF ARTIFICIAL INTELLIGENCE

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Abstract
The article formulates the main goals and objectives of artificial intelligence. It is shown how AI is related to the development of world computer science. A brief history is also presented about the outstanding scientists who stood at the origins of cybernetics, computer science and artificial intelligence, as well as the prospects for its further development.

Keywords: computer science, cybernetics, computers, artificial intelligence.

Introduction

The most significant results of scientific research for humanity were obtained by scientists and researchers at the intersection of various scientific fields. As a result, scientists have become the creators of new scientific directions, one of which is the artificial intelligence system - the youngest scientific direction.

Artificial intelligence is a complex and multifaceted system that is being developed mainly in the field of computer science and computer technology. It is used to solve a wide range of problems and covers various fields of activity, including science, manufacturing, healthcare, environmental protection, linguistics, psychology and much more.

Artificial intelligence systems are widely used in special tasks facing law enforcement agencies and other organizations.

AI goals and objectives

The main goal of artificial intelligence (AI) is to improve the efficiency of using computer technology. AI seeks to understand the principles of human intelligence and imitate intelligent human behavior.

In practice, this is implemented in the form of knowledge-based expert systems and systems that allow a person to interact with a computer.

Application areas of AI include:

- pattern recognition;
- generating proofs in mathematics;
- computer games;
- robot control;
- development of systems for solving intellectual problems, etc.

The main tasks of artificial intelligence include:

1. Natural language processing (NLP). Creation of intelligent systems that can recognize and analyze speech, as well as process and generate text in natural language.

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2. Machine translation. Development of systems capable of translating speech and text from one language to another. This includes the creation of simultaneous translation systems, as well as systems that can determine the original language from speech, hieroglyphs or text.
3. Text generation. Development of systems that can generate natural language texts on various topics.
4. Simulation of human thinking. This task is based on biological research about how humans process information and think. Artificial intelligence must be able to use experience and knowledge and convey it in natural language.

The development of artificial intelligence (AI) systems is closely related to the development of modern computer science.

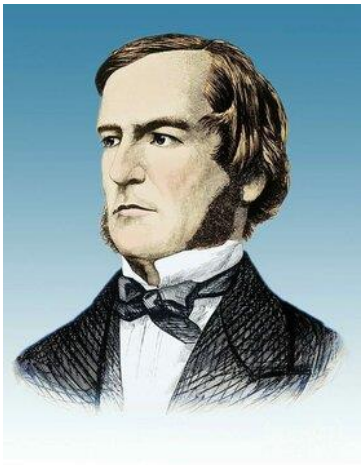
AI is an interdisciplinary field of knowledge that draws on scientific fields such as computer science and information science. It strives to create systems that can understand languages, reason, learn, solve problems, and make decisions just like humans do [1]. In addition, as part of the development of AI, the ethical aspects of using such systems are being studied.

The development of AI is helping to improve human learning and decision making. AI systems strive to achieve results that are typically achieved by humans when performing intelligent work.

Stages of development of computer science and AI

People first started talking about artificial intelligence (AI) in the mid-1950s. Its formation was based on such sciences as applied mathematics, logic, computer science and others.

One of the key areas was mathematical logic, which became the basis for the creation of modern programming languages. Its founder is considered to be **George Boole** [2]**.**



George_Boole (1815-1864)

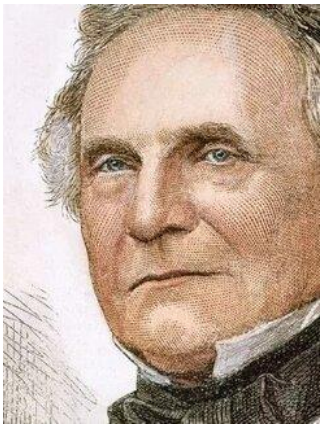
He introduced a new type of variables into mathematics - logical ones. These variables can only take two values: 0 (False) or 1 (True). They work with operations that have logical meaning.

The main operations in Boolean algebra are:

— conjunction (I);
— disjunction (OR);
— negation (NOT).

All modern programming languages are based on Boolean algebra. The fundamentals of this algebra were first described in 1854 in the work “A Study of the Laws of Thought.”

Charles Babbage – mathematician, philosopher, inventor and mechanical engineer - created the concept of a digital programmable computer.

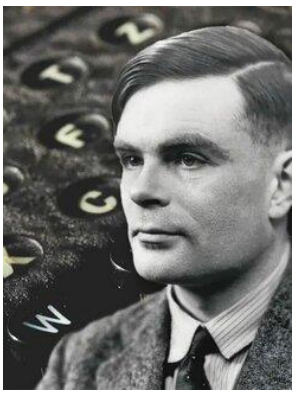


Charles Babbage (1791-1871)

Experts call Charles Babbage the “father of the computer” [3]. He invented the first mechanical computer, the difference engine. This invention became the basis for the creation of more complex electronic designs. The basic ideas of modern computers are set out in Babbage's Analytical Book.

Charles Babbage's Analytical Engine is considered the first prototype of the modern computer. This invention was centuries ahead of its time. Babbage's difference engine made it possible for the first time to automate the calculation process, making it partially independent of human intervention. By creating the Analytical Engine, Babbage was significantly ahead of the technical capabilities of his time and almost a hundred years ahead of the very idea of creating such a device [3].

Alan Turing, a famous English mathematician, had a significant influence on the development of computer science. In 1936, he proposed an abstract computational model known as the Turing Machine. This model made it possible to formalize the concept of “algorithm”, which is widely used in software development.



Alan Turing (1912-1954)

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After the end of World War II, the world's first computer, based on Turing's design, was created at the London National Physical Laboratory. This computer could store the program in its memory.

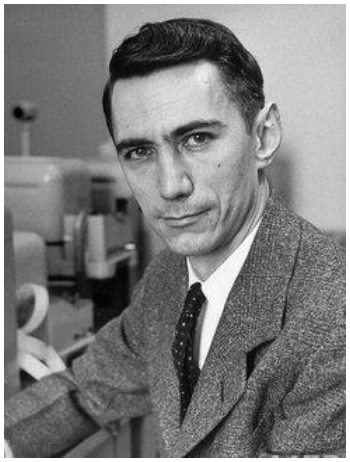
Turing was not only a mathematician, but also a philosopher. In 1950, he published an article in Mind magazine, “Computing Machinery and the Mind,” based on his mathematical ideas and developments [4]. In this article, he discussed the question of whether it would be possible to create artificial intelligence (AI) that would be so advanced that it would be difficult to determine, without a special test, whether you are communicating with a real person or with an AI.

The Turing Test sparked a lively debate. There were no computers at that time; they appeared later. But Turing managed to foresee their appearance, their architecture, and formulate the foundations of computer science. He also developed ideas that were later used to create artificial intelligence systems.

Alan Turing proposed an intuitive approach to artificial intelligence in his famous paper “Computing Machinery and Intelligence,” published in 1950. In this article, he described a procedure that he believed could determine whether a system has intelligence. This procedure is called the Turing test.

Most researchers agree that passing the Turing test is a necessary, but not sufficient, factor for a system to be considered intelligent. However, many will argue with this statement, since the nature of human intelligence is still not fully understood. Because of this, developing a test to test for human-like intelligence may be pointless.

Claude Ellwood Shannon was a prominent American scientist, mathematician, engineer and cryptanalyst. He made a huge contribution to the development of information technology, and his discoveries are actively used in the creation of artificial intelligence systems [5].



Claude Shannon (1916–2001)

Shannon introduced the concept of "bit" in 1948, defining it as the smallest unit of information. Experts recognize him as the founder of the modern theory of communications and communication systems.

In addition, Shannon developed the theory of probabilistic circuits and control systems, as well as automata systems.

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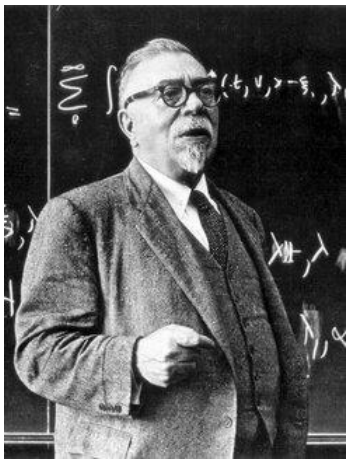
Norbert Wiener is an outstanding and brilliant American scientist and philosopher [6].



Norbert Viener (1894 – 1964)

Norbert Wiener is a professor of mathematics at the Massachusetts Institute of Technology (MIT), an outstanding American mathematician, and the founder of cybernetics. He used mathematical methods and electronic computing systems to create this science.

The scientist is also known as the creator of the theory of artificial intelligence. His research has had a huge impact on the development of information technology, robotics and artificial intelligence.

Thanks to his scientific works, Norbert Wiener developed cybernetics technologies, which are actively used in various fields, including the development of artificial intelligence systems, technical systems in medicine, linguistics and social sciences, etc.

John von Neumann is a prominent Hungarian-German mathematician who made significant contributions to the development of information science, computer science, quantum physics, functional analysis, set theory, economics and other fields of science.

John von Neumann (1903-1957)

John von Neumann is a renowned Hungarian-American mathematician and physicist. He made significant contributions to the development of such fields of science as mathematical logic, group theory, operator algebra, quantum mechanics, statistical physics, functional analysis, set theory, economics and others.

Von Neumann was a member of the Manhattan Project. In 1945, he published a report in which he defined the basic principles of operation and architecture of modern computers. These ideas

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were further developed, and about a year later the article “Preliminary consideration of the logical design of an electronic computing device” appeared. [7,8].

In his report, von Neumann emphasized that the main function of a computer is arithmetic and logical operations. Arithmetic and logical information, as well as instructions, are stored in RAM.

After these studies, experts began to consider computers as an object of scientific interest.

The conceptual architecture of the computer proposed by von Neumann became the basis for the creation of modern computers.

Conclusion

The appearance of the first electronic computers (computers) was greeted with great enthusiasm by scientists and specialists. They appreciated not only their ability to quickly perform arithmetic operations, but also their ability to solve problems that previously only the human mind could do.

Modern computers can solve logical problems, develop game programs, play chess, recognize and analyze patterns, investigate linguistic problems, perform simultaneous translation from one language to another, create texts in natural language on a given topic and improve their quality, and also write music and poetry.

Experts realized that these machines and software made it possible to automate processes that were previously considered only accessible to humans. The explosive development of artificial intelligence was made possible thanks to advances in the field of computer science, computer science, mathematical logic and other sciences.

According to experts, in the coming decades, AI systems will be created that will be able to improve themselves and will not be inferior to the human mind.

References

1. Born & Born-Lechleitner. [Electronic resource]. Available at: https://www.researchgate.net/publication/329091978_In_Defence_of_Machine_Learning_Debunking_the_Myths_of_Artificial_Intelligence. 2018/1987, pp. vii–viii. DOI: 10.5964/ejop.v14i4.1823. Date of access: 03/29/2024

2. George Boole is the father of mathematical logic. Information taken from the portal “Scientific Russia” [Electronic resource]. Access mode: https://scientificrussia.ru/). https://scientificrussia.ru/articles/dzhordzh-bul-otets-matematicheskoj-logiki. Date of access: 03/29/2024

3. On the theoretical principle of the machinery for calculating tables. —Edinburgh Phil. J., vol. 8, 1823? p. 122-128.

4. A.M. Turing. Computing Machinery and Intelligence. Mind 1950; LIX (236): 433-460 doi:10.1093/mind/LIX.236.433/

5. Who is Claude Shannon and why is he famous? The story of the man who created Information Theory. [Electronic resource]. Access mode: https://dzen.ru/a/ZW3s0OH4LENF9APb. Date of access: 04/12/2024

Web of Technology: Multidimensional Research Journal
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6. Norbert Wiener-scientist, laid the foundations of cybernetics [Electronic resource]. Access mode: https://medium.com/@BlakeH99555/norbert-scientist-laid-the-foundations-of-cybernetics-3da4171b7dd6. Date of access: 03/30/2024
7. John von Neumann: Prominent mathematician who helped create the atomic bomb. [Electronic resource]. Available at: https://anagrath.medium.com/john-von-neumann-the-colorful-mathematician-who-helped-design-the-atomic-bomb-f36576272881. Date of access: 03/15/2024
8. Preliminary Discussion of the Logical Design of an Electronic Computing Instrument. [Electronic resource]. Access mode: https://docs.yandex.ru/docs/view?tm=1714907454&tld=ru&lang=en&name=fetch.php%3Fmedia%3Dpreliminary_discussion_burks1946.pdf&text=Preliminary%20Discussion%20of%20the%20Logical%20Design%20of%20an%20Electronic%20Computing%20Instrument%20Arthur%20W.%20Burks%2C%20Herman%20H.%20Goldstine%2C%20and%20John%20von%20Neumann&url=https%3A%2F%2Fsafari.ethz.ch%2Fdigitaltechnik%2Fspring2023%2Flib%2Fexe%2Ffetch.php%3Fmedia%3Dpreliminary_discussion_burks1946.pdf&lr=10335&mime=pdf&l10n=ru&sign=ed516acbe178c2a4a2fe92cc078c4ed4&keyno=0&nosw=1&serpParams=tm%3D1714907454%26tld%3Dru%26lang%3Den%26name%3Dfetch.php%3Fmedia%3Dpreliminary_discussion_burks1946.pdf%26text%3DPreliminary%2BDiscussion%2Bof%2Bthe%2BLogical%2BDesign%2Bof%2Ban%2BElectronic%2BComputing%2BInstrument%2BArthur%2BW.%2BBurks%252C%2BHerman%2BH.%2BGoldstine%252C%2Band%2BJohn%2Bvon%2BNeumann%26url%3Dhttps%253A%2F%2Fsafari.ethz.ch%2Fdigitaltechnik%2Fspring2023%2Flib%2Fexe%2Ffetch.php%253Fmedia%253Dpreliminary_discussion_burks1946.pdf%26lr%3D10335%26mime%3Dpdf%26l10n%3Dru%26 sign%3Ded5 . Date of access: 03/29/2024

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