



Formation and Development of Artificial Intelligence

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ABSTRACT

In this article, you will learn about "artificial intelligence" which has become a hot topic these days. In the article what is artificial intelligence?, History of artificial intelligence, stages of development?, Is artificial intelligence a threat to humanity?, What is its positive or negative impact on society? How can artificial intelligence be used in various fields today? We will try to find answers to such questions.

Keywords:

artificial intelligence, intellectual property, technology, computer, modeling, algorithms, Deep Blue, IBM, foreign language recognition, Intel, Microsoft, Alpha Go, AI technology.

Introduction

The term "artificial intelligence" appeared in 1956, but today AI technology has gained real popularity against the background of increasing the volume of data, improving algorithms, optimizing computing power and data storage facilities.

The first research in the field of AI, which began in the 1950s, was aimed at solving problems and developing symbolic computing systems. In the 60s, the US Department of defense became interested in this field: the US military began training computers to simulate human mental activity.

In the 1980s, scientists Barr and Feigenbaum proposed a definition of artificial intelligence. Artificial intelligence (AI) is the field of computer science that develops intelligent computers. After this process, the definition of this direction did not change much. Therefore, it is necessary to note that these systems are divided into a separate category.

They can have abilities related to abilities, for example: the human mind - recognition of

speech and foreign language, learning and thinking, etc.

Currently, artificial intelligence includes certain software systems and algorithms that have the ability to solve any problems, for example, a person. But before that, AI technology was needed. This development has gone through a long history.

Literature review

In the first half of the 20th century, science fiction introduced the world to the concept of artificially intelligent robots. By the 1950s, there was a generation of scientists, mathematicians, and philosophers who dreamed of understanding the technologies for creating and developing artificial intelligence and offered to put it into practice.

One such person was Alan Turing, a young English scientist who studied the mathematical possibilities of artificial intelligence. Turing suggested that if people can use the available information to solve problems and make decisions, why have machines, and can't you do the same? He put forward the idea that. This

was the logical structure of his paper "Computing Machines and Intelligence" (1950), in which he was able to formulate his views on how to build the intelligent machines he discussed and how to test their power.

But what prevented Turing from doing the work then and there? First, computers had to change significantly. Before 1949, computers did not have the basic condition of intelligence: they could not remember commands, only execute them. In other words, we could tell computers what to do, but they couldn't remember what they did. Second, the calculation was very expensive.

In the early 1950s, the cost of renting a computer reached \$200,000 a month. Only prestigious universities and large technology companies could afford such expenses in completely unexplored territory.[1] A proof of concept, as well as support, was needed to convince the world community that the development of machine thinking was worth it, as well as high-ranking people for approval and funding.

Five years later, the proof of concept was launched by Allen Newall, Cliff Shaw and Herbert Simon, creating The Logic Theorist. "Logic Theorist" was a program designed to simulate human problem solving and was funded by the Scientific Research Corporation (RAND). It is widely considered to be the first artificial intelligence program and was presented in 1956 at the Dortmund Summer Research Project on Artificial Intelligence (DSRPSI), founded by Joseph McCarthy and Marvin Minsky.[2]

From 1957 to 1974, artificial intelligence developed. Computers can store more data and have become faster, cheaper and more convenient. Machine learning algorithms have also improved and people have a better understanding of which algorithm to apply to their problem.

Research Methodology

Clearing the initial roadblocks to the development of artificial intelligence has revealed enough obstacles. The biggest challenge was lack of computing power to do anything important, computers couldn't store

enough data or process it fast enough to communicate.

For example, you need to know the meaning of many words and understand the meaning of many combinations. As patience dwindled, so did funding, and research progressed very slowly for a decade.

In fact, as for modeling logical reasoning, then the problem of automating theorem proving could serve as a good model problem here. Since 1960, several theorem proving programs have been developed. These programs, according to the American expert in the field of artificial intelligence J. McCarthy, "common sense", that is, the ability to create deductive solutions, were created.

Through its Fifth Generation Computing Project (FGCP), the Japanese government has provided significant funding for expert systems and other activities related to artificial intelligence. 1982-1990 they invested 400 million dollars in the computer revolution, data processing, introduction of logical programming and improvement of artificial intelligence. Unfortunately, most of the ambitious goals were not achieved. However, it can be argued that the indirect influence of FGCP inspired a talented young generation of engineers and scientists. Yet funding for the FGCP dried up and AI fell out of the picture again.

Ironically, in the absence of public funding and public hype, AI programs have flourished. The 1990s and 2000s saw many of AI's most important goals achieved. For example, in 1997, the reigning world chess champion, IBM's Deep Blue computer program, beat Grandmaster Garry Kasparov.

People didn't start writing code differently, more correctly, and more accurately to create artificial intelligence, so what changed? It turns out that the main limit of computer memory that held us back 30 years ago is no longer a problem. According to Moore's Law [4] (developed in 1965 by Gordon Moore, later co-founder of Intel Corporation), the memory and speed of computers doubles every year. And now the machine finally worked and exceeded our needs in most cases.

It's how Deep Blue beat Garry Kasparov in 1997, and it's how Google's Alpha Go beat Chinese champion Qin Jin in 2017. There is a logical explanation for this rollercoaster of AI development; scientists fill AI capacity to the level of possible current computing power (data storage and processing speed) and then wait for Moore's Law to reach the desired level again.

Analysis and results

The number of projects in the field of artificial intelligence and machine learning in the world only in 2015-2019. increased several times. In 2015, only 17 projects implemented by large companies were announced, and in the first half of 2017 - 74 projects. In just four years, 162 such projects were registered in 30 countries and 20 industries. In 85% of cases, these are implemented projects, plans or tests are carried out in all sectors, except in 15% of state bodies. The main share of clients of such initiatives is large business (90%).

The USA is the leader in the number of such projects. In second place, Great Britain and India use these solutions in large investment banks. Markets and market analysts identify such companies as key players in the global market for deep learning technologies.

For example:

- Google Inc. (USA) and Alpha Go
- IBM Corporation (USA),
- Intel Corporation (USA),
- Microsoft Corporation (USA),
- NVIDIA Corporation (USA),
- Hewlett Packard Enterprise (USA),
- Baidu Inc. (China) (Baidu Institute of Deep Learning),
- Qualcomm Technologies Inc. (USA),
- Sensory Inc. (USA),• General Vision Inc. (USA),
- Skymind (USA),
- Facebook Inc. (USA)

- Many developments are being carried out at world-class technical universities [5]. Governments around the world are allocating large amounts of public funds to the development of clusters that develop new technologies based on artificial intelligence, whose goal is to achieve a comparative advantage in the global economy. Often this process takes place on a very large scale, and good intentions can hide disastrous consequences for the global economy [6].

- Google currently has over 1000 deep learning projects across all major product sectors like search, Android, Gmail. In September 2016, Google introduced deep learning to Google Translate, Maps, YouTube. Deep learning technology through the analysis of large numbers of images is the basis for the successful implementation of Google's self-driving car project [7].

Conclusion/Recommendations

So, what does the future hold for us? In the near future, the SI language looks like a big step forward. In fact, it has already begun. One can imagine interacting with an expert system in conversation or translating a conversation in two different languages in real time. Right now, we can see driverless cars on the road. In the long term, the goal is general intelligence, a machine that surpasses human cognitive abilities in all tasks. It's like the kind of intelligent robot we're used to seeing in movies. But even if this ability exists, morality acts as a strong barrier against its realization. When that time comes, we'll have to seriously discuss machine politics and ethics (admittedly, both are human subjects), but for now we'll let AI grow steadily.

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