



## PROSPECTS FOR THE INTRODUCTION OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN THE EDUCATIONAL SYSTEM

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**Annotation:** *the article examines and analyzes the prospects for higher education system of artificial intelligence technologies, Higher Education, Higher Education. In higher education, the effective use of artificial intelligence technologies is based on the fact that it allows students to choose the most optimal learning strategy adapted to the individual abilities and needs of students and the needs of the labor market.*

**Key words:** *higher education, artificial intelligence, digital transformation, strategy, Personnel Training, Industry 4.0.*

Today, social, economic, ethical, legal comprehensive research is being carried out, dedicated to the implementation of artificial intelligence technologies in various spheres of society. As well as opportunities and threats, the determination of the final limits of the practical application of artificial intelligence is of urgent importance.

In the last 5 years, there has been a huge change in the higher education system of our country, a number of works have been carried out to improve the quality of educational services provided by higher education institutions and ensure their competitiveness at the international level. In one sentence, modern education is being transformed into a mobile and open system. The introduction of modern information and communication technologies, e-learning resources into the educational process is helping to form a new paradigm of Education.

The essence of digital transformation of education is expressed by each student in achieving the necessary educational results by organizing an educational process based on the growing potential of digital technologies, including artificial intelligence systems, the use of virtual reality.

The term artificial intelligence was proposed by American scientist John McCarthy in 1956. Artificial intelligence is understood as the ability of intelligent systems and algorithms to perform the functions traditionally performed by humans through software. Its main purpose is to model the processes of attainable knowledge with reason.



Indeed, today humanity is on the eve of the Fourth Industrial Revolution [1], it is no longer possible to prevent the development of artificial intelligence. Neural networks solve a number of tasks several times more efficiently and more accurately than people, which in the near future will allow the full automation of many jobs [2] and lead to an increase in unemployment. With this, it is worth noting that different technologies in the early days helped to squeeze people out of the labor market, but people managed to adapt to the constantly ongoing changes. Given all the benefits of using artificial intelligence, including increasing labor productivity, it is necessary to justify that humans must complete it [3] and not depend on it.

Artificial intelligence technologies today determine the development of the world economy. Investments in them form the main investments of venture capital in the United States. A similar fuss is taking place in Europe, Japan and, China [4].

According to international experts, investments in artificial intelligence technologies have increased from 2015 to 2018,

approximately US \$ 40 billion. The market for technological solutions in the world market, developed on the basis of artificial intelligence in 2019, was US \$ 21.5 billion, and according to further forecasts will reach almost \$ 140 billion by 2024. Technological solutions are developed on the basis of artificial intelligence in various sectors of the economy and public relations, and the growth of the world economy will be at least US \$ 1 trillion in 2024 [4].

Over the past decade, completely new classes and types of artificial intelligence have appeared, such as [5]:

- "Intelligent assistants" (agents). Cortana from Microsoft, Siri from Apple, GoogleNow, Echo from Amazon and others, they are several at the same time

"Smart" is able to combine functions and abilities, namely: speech recognition, analysis, personal information about a particular user and the ability to interpret it at some level, help in Internet search and online stores, etc.

- \* robotic systems equipped with special sensors and sensors that provide an opportunity to analyze, control or quickly respond to changes in various parameters and information of artificial intelligence and the surrounding physical world, such as temperature, humidity, pressure, etc. A small class of such systems is a variety of algorithms and technologies used in the creation of unmanned/automated vehicles;

- artificial intelligence systems that have learned to win the winners of various intellectual games (chess, checkers, go and even poker). For example,



In 2016-2017, GoogleAlphaGo won the go match of the highest level Danish professionals.

At this point, it should be noted that despite such a rapid development of artificial intelligence systems, in our opinion, they will never completely replace human labor. A person has special qualities and emotions that are difficult to reproduce in artificial intelligence. For example, intuition, creative thinking, critical thinking, cognitive flexibility, empathy, benevolence, etc.

Artificial intelligence technologies can be applied in a variety of industries and industries, such as industry, construction, transportation, communications, education, science, health, finance, commerce, culture, tourism, housing utilities, etc.

The use of artificial intelligence in education can lead to significant changes, providing new opportunities for the reconstruction of the work of the entire industry. If artificial intelligence technologies are applied to the field of education, the effectiveness of the educational process will increase, and the amount spent on its organization will decrease.

The artificial intelligence system of the educational process will have to include the following elements:

- \* search information system providing the formation of a database on the educational process from various sources;
  - automatically updated library of electronic textbooks, tutorials and methodological manuals;
  - a system for monitoring the level of knowledge of students, including a subsystem for continuous control of their achievements, activities and results;
- \* a library of control tasks, which is automatically adjusted to the level of its preparation, depending on the results of each student;
- \* automated training load distribution system;
- service system providing communication between student and higher education institution.

The implementation of the elements listed above using artificial intelligence technologies in the educational process can play an important role in the study and development of a person throughout his life.

Today, it can be singled out as advanced technologies of Industry 4.0 in modern educational content and tools [6]:

- Internet items (distance learning laboratories, distance laboratory stands);



- additive manufacturing (production of 3D printers in training workshops, 3D modeling (in Computer Science, Mathematics), parts for robots, technical means in further education for students).
- artificial intelligence, mechanical engineering and robotics (using avatars and chat bots in the learning process to advise, test and design students, using existing robots in distance learning);
- big data (BigData), blockchain and cloud computing (formation of safe portfolios of students and professors, formation of educational and professional competencies, use of cloud technologies in the educational process);
- virtual and extended reality, that is, the use of laboratory facilities with laboratory stands and extended reality elements, which are imitated in the educational process.

As a conclusion, it is worth saying that the use of artificial intelligence technologies in the higher education system will have excellent opportunities for universities not only for their academic activities, but also for ensuring the effectiveness of the entire system, innovation and supernatural initiatives. Only through the realization of this fact can the potential of the changes that exist in the higher education system be realized. At the same time, the use of artificial intelligence technologies by universities facilitates the process of providing educational services and improves their quality, and makes it possible for each student to successfully study at the University and form an individual educational trajectory in the growth of further professional activity.

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