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THE ROLE OF ARTIFICIAL NEURAL NETWORKS IN SOCIETY.

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Annotation. *The article discusses the technologies that model the human brain, which are widely used in data analysis, data mining, and decision-making. In society, artificial neural networks are bringing revolutionary changes in the economy, healthcare, education, transportation, everyday life, and other areas. With the help of these technologies, production efficiency increases, medical diagnostics becomes more accurate, education is individualized, and automated transportation systems work efficiently. However, they also raise ethical, social, and economic issues. The article examines the positive and negative impacts of artificial neural networks on society and discusses the necessary measures for their future development..*

Key words: *Artificial neural networks, human brain activity, modeling technologies, economics, healthcare, education, transportation, revolutionary change, medical diagnostics, educational individualization, automated transportation systems, ethical, social, economic.*

Аннотация. *Аннотация. В статье рассматриваются технологии моделирования человеческого мозга, которые широко используются в анализе данных, добыче данных и принятии решений. В обществе искусственные нейронные сети приносят революционные изменения в экономику, здравоохранение, образование, транспорт, повседневную жизнь и другие сферы. С помощью этих технологий повышается эффективность производства, медицинская диагностика становится более точной, образование индивидуализируется, а автоматизированные транспортные системы работают эффективно. Однако они также поднимают этические, социальные и экономические вопросы. В статье рассматриваются положительные и*

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отрицательные воздействия искусственных нейронных сетей на общество и обсуждаются необходимые меры для их будущего развития.

Ключевые слова: *искусственные нейронные сети, активность человеческого мозга, технологии моделирования, экономика, здравоохранение, образование, транспорт, революционные изменения, медицинская диагностика, индивидуализация образования, автоматизированные транспортные системы, этический, социальный, экономический.*

With the development of artificial intelligence (AI) and machine learning, artificial neural networks (ANNs) are gaining a significant role in society. A neural network is a technology based on modeling the activity of a neural network in accordance with its own behavior, capable of learning from various databases and performing complex tasks. This technology is widely used in practice, primarily, in the fields of medicine, healthcare, education, transportation and many other areas. The article analyzes the role of artificial neural networks in society and the changes, advantages and socio-economic impacts they have brought about.

The principle of operation of artificial neural networks. Artificial neural networks, as their name suggests, imitate the structure of the human brain. While the brain is made up of neurons, an artificial neural network is made up of a collection of interconnected "neurons". Each neuron receives input, processes it, and transmits the resulting output. The learning process is carried out either between neurons or within the network itself. The network "learns" based on the information and gains experience, which helps it to perform new and complex tasks.

The main parts of a neural network are as follows: Input layers - Incoming data is fed into the network in this layer.

Hidden layers - Data is processed through hidden layers, and the learning process of the network continues.

Output layers - The final result of the network, a classification or prediction, is produced in this layer.

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The network changes its parameters (such as weights and intercepts) as it processes data, which allows it to work more accurately and efficiently.

Role in society. Economic development. Artificial neural networks are bringing about major changes in the economic sphere. They help automate production processes, increase efficiency, and optimize resources. For example, automated systems or thick production lines, quality control, and inventory processes become more efficient, reducing costs and speeding up production.

Neural networks are also used in the financial sector, for example, in making decisions on credit applications, detecting fraud, and analyzing investments. Banks and financial institutions use AI to make quick and accurate decisions, which allows them to improve their customer service.

Healthcare. In healthcare, artificial neural networks are making revolutionary strides. They are used to analyze medical images, such as X-rays, MRIs, or ultrasounds. Neural networks can detect and diagnose various diseases at an early stage. For example, neural networks have been very effective in detecting oncological diseases, such as cancer, in medical images.

In addition, AI is also used in genome analysis and genetic diseases. The role of artificial intelligence in developing personalized medical treatment approaches is increasing, but this mindless learning helps to improve health.

Education. In the field of education, artificial neural networks help to create learning systems that are adapted to students. But first of all, they organize services and develop customized learning programs, determining their speed. Such systems allow students to manage their own learning processes, and also help teachers implement an individual approach to each student.

In addition, SNTs are used in online learning platforms, for example, in video lessons or in data classification. But they increase the efficiency of learning and allow students to be provided with the necessary information in a timely manner.

Transport and logistics. Artificial neural networks are also widely used in the transport and logistics sectors. For example, autonomous transport systems, i.e. self-driving cars, work with the help of neural networks. Autonomous vehicles use neural

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networks to analyze their surroundings, detect obstacles, and obey traffic laws to operate safely and efficiently. This, in turn, helps to ensure human safety and makes transportation systems more efficient.

In logistics, neural networks are used to optimize inventory and supply chains. They help predict customer demand, distribute cargo, and reduce transportation costs.

Daily life and information technology. In everyday life, artificial neural networks are used in personal assistants, such as Siri, Google Assistant, and Alexa. These systems help users perform various tasks: making phone calls, writing text messages, listening to music, and many other tasks.

Neutral networks are also used in social networks, for example, to display ads tailored to users, describe content, and detect malicious content. With the help of artificial intelligence, data from social networks is analyzed and the opportunity to offer relevant content to users has been created.

Ethical and social issues. Artificial neural networks are raising new ethical and social issues in society. For example, deepfake technologies can create fake videos, which can harm people's privacy. Also under discussion are issues such as what algorithms are used in the decision-making processes of SNTs, how data is collected and how it is used.

In addition, the widespread use of automation and artificial intelligence may deprive some workers of their jobs. These issues are widespread in society, and solutions must be developed by governments and corporations to ensure social equality.

Artificial neural networks are bringing about major changes in society. In areas such as increasing economic efficiency, creating innovations in healthcare, individualizing education, developing transportation, and making everyday life more convenient, ANNs are playing an important role. However, along with their development, ethical, social, and economic issues need to be addressed. In order to fully utilize the impact of artificial intelligence on society and ensure the overall development of humanity, a careful and responsible approach to managing these technologies is needed.

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