

APPLICATION OF ARTIFICIAL NEURAL NETWORKS IN  
SOCIETY

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***Annotation.*** The article analyzes the application of artificial neural networks in society and its impact in various fields. Artificial neural networks are a technology based on modeling the activity of the human brain and are widely used in analyzing complex data, making decisions, and forecasting. In society, this technology is leading to revolutionary changes in the economy, healthcare, education, transport, everyday life, and other areas. With the help of artificial neural networks, production efficiency increases, medical diagnostics becomes more accurate, education is individualized, and transportation systems operate more efficiently. The article discusses the positive impact of artificial neural networks on society and the ethical and social problems of its development.

***Key words:*** Artificial neural networks, human brain activity, modeling, technology, decision-making, forecasting, economics, healthcare, education, transportation, everyday life, revolutionary change.

***Аннотация.*** В статье анализируется применение искусственных нейронных сетей в обществе и их влияние на различные сферы. Искусственные нейронные сети — это технология, основанная на моделировании деятельности человеческого мозга, которая широко применяется при анализе сложных данных, принятии решений и прогнозировании. В обществе эта технология приводит к революционным изменениям в экономике, здравоохранении, образовании, транспорте, повседневной жизни и других сферах. С помощью искусственных нейронных сетей повышается эффективность производства, медицинская диагностика становится более точной, образование индивидуализируется, а транспортные системы



*работают более эффективно. В статье обсуждается положительное влияние искусственных нейронных сетей на общество и этические и социальные проблемы его развития.*

**Ключевые слова:** *Искусственные нейронные сети, деятельность человеческого мозга, моделирование, технологии, принятие решений, прогнозирование, экономика, здравоохранение, образование, транспорт, повседневная жизнь, революционные изменения.*

Artificial neural networks (ANNs) are one of the main technologies of machine learning and artificial intelligence. These networks are based on modeling the human brain and are widely used in complex data processing, analysis, and decision-making. They consist of several layers of neurons and learn by analyzing incoming data. Currently, ANNs are used in many areas, including economics, healthcare, education, transportation, manufacturing, and everyday life. This article analyzes the application of ANNs in society and their social and economic impact in various areas.

**Principle of Operation of ANNs.** As its name suggests, an ANN imitates the work of brain neurons. Each neuron receives input information, processes it, and ultimately transmits output information. The network learns through the connections between neurons, weights, and their changes. During the learning process, the network understands how the data is related and adapts to new information. The main components of artificial neural networks are as follows:

Input layers – Data is fed into the network at this layer.

Hidden layers – Data is processed at this layer and the network continues to learn.

Output layers – Results or decisions are made at this layer.

**Applications of Artificial Neural Networks in Society.** Economic sphere. Artificial neural networks are widely used in the economy to increase production efficiency, optimize resource utilization, and automate economic processes. They are used in companies and industrial enterprises in the following areas:



**Automated production:** Artificial neural networks can be used to control and optimize production processes. For example, in factories, automatic production systems are operating using quality control, material inventory, and robotic systems.

**Forecasting:** Artificial neural networks can be used to predict future economic developments, market demand forecasts, and prices. This helps companies optimize resources and make more accurate investment decisions.

**In finance and credit:** Banks and financial institutions use artificial neural networks to make decisions on loan applications, detect fraud, and analyze investments. These systems help make decisions quickly and accurately, and also reduce credit risks.

**Healthcare.** Artificial neural networks are widely used in healthcare to optimize medical diagnostics and treatment processes. In medical image processing and disease detection, SNTs play the following roles:

**Medical image analysis:** Neural networks work effectively in analyzing X-ray images, MRI images, or ultrasound images. They help in early detection of complex diseases, such as oncology, heart disease, and other serious diseases.

**Drug development:** Neural networks are also used in genomic analysis and the creation of new drugs. They enhance scientific potential in medical research and the development of new therapeutic approaches.

**Personalized treatment:** Neural networks help in developing treatment plans based on genomic data, which are tailored to the individual characteristics of the patient. This allows for effective treatment for patients.

**Education.** In the field of education, artificial neural networks help in individualizing the learning process. By creating customized learning systems for students, taking into account their interests and learning speed, the following results can be achieved with the help of SNTs:

**Personalized curricula:** Neural networks allow students to analyze their learning style and create customized curricula for them.





Helping teachers: Artificial neural networks help teachers monitor student changes and development, as well as identify which topics students are struggling with.

Online learning platforms: Neural networks are used in online learning platforms to improve students' interactive experiences, customize learning materials and tests.

Transportation and logistics. Artificial neural networks are also of great importance in the transportation sector. They help in the effective management of transportation systems, ensuring road safety, and optimizing logistics processes:

Autonomous transportation systems: Artificial neural networks are used as a key technology in creating autonomous transportation systems. Autonomous vehicles use neural networks to analyze the road, identify obstacles, and make decisions for safe movement.

Logistics and delivery systems: Neural networks can be used to efficiently distribute cargo, reduce transportation costs, and shorten delivery times. This makes commercial and manufacturing processes significantly more efficient.

Applications of artificial neural networks in everyday life. Artificial neural networks are also widely used in everyday life. They provide convenience to users through personal assistants, such as Siri, Google Assistant, and Amazon Alexa. They perform the following functions:

Personal assistants: Systems such as Siri and Google Assistant help users with daily tasks, such as sending reminders, calls, and messages, listening to music, etc.

Advertising and content recommendations: Artificial neural networks are used in social networks, such as Facebook and Instagram, to recommend ads and content based on user preferences.

Artificial neural networks are having a positive impact on society in various areas. ANNs play an important role in areas such as increasing economic efficiency, creating innovations in healthcare, individualizing education, developing transportation, and making everyday life easier. However, along with the development of this technology, ethical and social issues also arise. Therefore, a



careful and responsible approach to the use of artificial neural networks is necessary. In order to achieve beneficial results for society, this technology must be aligned with social interests and minimize its risks.

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