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THE ROLE OF OPTICAL FIBERS IN SOCIETY.

Amirxonova Zulfiya Alimovna,
Qarshi State Technical University,
Student of the Department of Telecommunication Technologies

Annotation. *The article discusses the basics and practical applications of disease detection based on neural networks. Neural networks, one of the most advanced branches of artificial intelligence, provide great opportunities for early detection of diseases in the medical field and effective organization of diagnostic processes. The article provides detailed information about the main types of neural networks, in particular, feedforward networks, convolutional networks (CNN), recurrent networks (RNN) and deep neural networks (DNN).*

Key words: *Neural networks, artificial intelligence, medicine, diseases, diagnostics, federated networks, convolutional networks (CNN), recurrent networks (RNN) and deep neural networks (DNN), oncology, cardiology, neurology, endocrinology, infectious diseases.*

Аннотация. *В статье рассматриваются основы и практические приложения диагностики заболеваний на основе нейронных сетей. Нейронные сети, одна из самых передовых ветвей искусственного интеллекта, предоставляют большие возможности для раннего выявления заболеваний в медицинской сфере и эффективной организации диагностических процессов. В статье дана подробная информация об основных типах нейронных сетей, в частности, сетях прямого распространения, сверточных сетях (CNN), рекуррентных сетях (RNN) и глубоких нейронных сетях (DNN).*

Ключевые слова: *Нейронные сети, искусственный интеллект, медицина, заболевания, диагностика, федеративные сети, сверточные сети (CNN), рекуррентные сети (RNN) и глубокие нейронные сети (DNN), онкология, кардиология, неврология, эндокринология, инфекционные заболевания.*

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It also analyzes the application of these networks in such fields as oncology, cardiology, neurology, endocrinology and infectious diseases, their effectiveness and advantages in disease detection. The article also considers the widespread use of neural networks in medicine, along with limitations, data security and understandability issues. The need for scientific research and the introduction of new technologies to improve the role and capabilities of neural networks in medicine is emphasized.

Today, optical fibers are widely used in various areas of our lives. Their main application is in telecommunication systems, creating completely reliable and fast communication capabilities in areas such as the Internet, telephone communication and television transmission. Optical fibers, through modern lighting technologies, changes in the industrial and medical fields, as well as achievements in other fields of science and technology, have fundamentally changed the life of society and are taking an important place in many areas. This article examines the role of optical fibers in society, their importance in telecommunications, medicine, industry and other areas.

Optical fibers are thin and elastic fibers made of glass or other materials used to transmit light signals. Their main principle of operation is to transmit light. Optical fibers transmit radiation by internal reflection, which allows them to transmit information at very high speeds. This technology is distinguished by its high speed, low loss and safety in telecommunications, Internet transmission and many other areas.

Optical Fibers and Telecommunications. The most common application of optical fibers is in telecommunications systems. Optical fibers enable high-speed internet and telephone communications because they do not use electromagnetic waves, but transmit light signals. Data can be transmitted over relatively long distances quickly without any signal loss.

High-speed Internet. Optical fibers form the core infrastructure of the Internet. High-speed internet transmission over optical fibers allows users to connect to multiple networks and exchange large amounts of data quickly. Therefore, optical

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fibers play an important role in the development of the global digital economy and society.

Telephone and Video Communication. Using optical fibers, telephone calls and video chats are made with much higher quality and without delays. Optical fibers, which are used for transmitting telephone and video conferencing, are much more efficient and faster than traditional wired telephone systems, minimizing limitations and problems.

Television Transmission. Optical fibers play an important role in cable TV systems and other high-quality television transmissions. Optical fibers provide high quality in transmitting HD and 4K television signals, significantly improving the quality of television broadcasts.

Role in Industry. Optical fibers are also of great importance in the industrial sector. Their convenience and performance efficiency help to accelerate and optimize the operation of industrial systems. Optical fibers are used in the following areas in industry:

Industrial Automation. Optical fibers are used in industrial systems for automation and monitoring control. For example, robotic technologies and sensor systems are able to transmit data in real time via optical fibers. This helps to make production processes more efficient and faster.

Augmented Reality (AR) and Virtual Reality (VR). Optical fibers are essential for the use of AR and VR technologies in industry. Through these technologies, operators can receive high-speed data when working with remotely controlled systems, which increases their work efficiency.

Optical Fibers in Medicine. Optical fibers are also being effectively used in the medical field. Their use in medicine is growing significantly in the following areas:

Medical imaging technologies. Optical fibers are used in medical imaging systems, in particular in endoscopy and laser surgery. Optical fibers are used to view and analyze internal organs through endoscopy, obtaining high-resolution images.

Optical fibers are also used to identify and treat tissues in surgical procedures using laser methods.

Laser surgeries. Laser surgeries are widely used, especially in restoring vision and treating skin diseases. Optical fibers help to direct the laser beam accurately and precisely, which increases the safety and efficiency of surgical procedures.

Remote patient monitoring. Optical fibers can transmit medical data quickly over a distance. This helps in monitoring patients and providing healthcare services remotely. Remote monitoring is effectively used in medicine, especially in rural areas and dangerous places.

Optical Fibers and Education. Optical fibers are also playing a major role in the education system. Fast internet and information exchange opportunities create convenient conditions for teachers and their students to study and learn effectively. Distance learning systems and online classes in educational institutions using optical fibers continue to exist even in changing conditions.

Optical fibers are playing an important role in various spheres of social life. They are used in telecommunications, industry, medicine and education and make a significant contribution to the development of society. The high-speed data transmission capabilities, safety, and efficiency of optical fibers are making this technology increasingly widely used and in demand. The importance of optical fibers is expected to increase in the future, as their applications expand further and become an integral part of our lives as technology continues to evolve and develop.

REFERECEN:

1. Daminova B. E., Bozorova I. J., Jumayeva N. X. FORMATION OF TEXT DATA PROCESSING SKILLS //Экономика и социум. – 2024. – №. 4-2 (119). – С. 110-119.

2. Daminova B. E. et al. USE OF ONLINE ELECTRONIC DICTIONARIES IN ENGLISH LANGUAGE LESSONS //Экономика и социум. – 2024. – №. 5-1 (120). – С. 193-196.

3. Daminova B. E. et al. ADVANTAGES OF USING MULTIMEDIA RESOURCES IN ENGLISH LANGUAGE LESSONS //Экономика и социум. – 2024. – №. 5-1 (120). – С. 207-210.

4. Daminova B. E. et al. SCIENTIFIC AND METHODOLOGICAL SUPPORT OF EDUCATIONAL INFORMATION INTERACTION IN THE EDUCATIONAL PROCESS BASED ON INTERACTIVE ELECTRONIC EDUCATIONAL RESOURCES: USING THE EXAMPLE OF TEACHING ENGLISH //Экономика и социум. – 2024. – №. 5-1 (120). – С. 233-236.

5. Daminova B. E. et al. THE ROLE AND FEATURES OF THE USE OF INFORMATION TECHNOLOGY IN TEACHING A FOREIGN LANGUAGE //Экономика и социум. – 2024. – №. 5-1 (120). – С. 184-188.

6. Daminova B. E. et al. USING THE GOOGLE CLASSROOM WEB SERVICE AND PREPARING INTERACTIVE PRESENTATIONS //Экономика и социум. – 2024. – №. 5-1 (120). – С. 216-225.

7. Daminova B. E., Bozorova I. J., Jumayeva N. X. CREATION OF ELECTRONIC LEARNING MATERIALS USING MICROSOFT WORD PROGRAM //Экономика и социум. – 2024. – №. 4-2 (119). – С. 104-109. 1. – S. 1169-1172.

8. Daminova B. E. et al. APPLICATION OF MODERN INFORMATION AND COMMUNICATION TECHNOLOGIES IN TEACHING ENGLISH //Экономика и социум. – 2024. – №. 5-1 (120). – С. 197-201.

9. Daminova B. E. et al. SOFTWARE TOOLS FOR CREATING MULTIMEDIA RESOURCES IN TEACHING ENGLISH //Экономика и социум. – 2024. – №. 5-1 (120). – С. 202-206.

10. Daminova B. E. et al. THE MAIN ADVANTAGES, PROBLEMS AND DISADVANTAGES OF USING MULTIMEDIA IN TEACHING FOREIGN LANGUAGES //Экономика и социум. – 2024. – №. 5-1 (120). – С. 189-192.

11. Даминова Б. Э. и др. ОБРАБОТКА ВИДЕОМАТЕРИАЛОВ ПРИ РАЗРАБОТКЕ ОБРАЗОВАТЕЛЬНЫХ РЕСУРСОВ //Экономика и социум. – 2024. – №. 2-2 (117). – С. 435-443.

ISSN 3060-4567

12. Daminova B. E. GAUSS AND ITERATION METHODS FOR SOLVING A SYSTEM OF LINEAR ALGEBRAIC EQUATIONS //Экономика и социум. – 2024. – №. 2 (117)-1. – С. 235-239.

13. Daminova B. E., Oripova M. O. METHODS OF USING MODERN METHODS BY TEACHERS OF MATHEMATICS AND INFORMATION TECHNOLOGIES IN THE CLASSROOM //Экономика и социум. – 2024. – №. 2 (117)-1. – С. 256-261.

14. Daminova B. E. et al. USE OF ELECTRONIC EDUCATIONAL RESOURCES IN THE PROCESS OF TEACHING A FOREIGN LANGUAGE //Экономика и социум. – 2024. – №. 5-1 (120). – С. 230-232.

15. Daminova B. E. et al. USING COMPUTER PRESENTATIONS IN TEACHING FOREIGN LANGUAGES //Экономика и социум. – 2024. – №. 5-1 (120). – С. 211-215.

16. Daminova B. E. et al. USING DIGITAL TECHNOLOGIES IN FOREIGN LANGUAGE LESSONS //Экономика и социум. – 2024. – №. 5-1 (120). – С. 226-229.