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ВЛИЯНИЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА МЕДИЦИНУ

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INFLUENCE OF ARTIFICIAL INTELLIGENCE IN MEDICINE FIELD

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Резюме. В статье рассматривается применение искусственного интеллекта в медицине, включая диагностику, машинное обучение, роботизированную хирургию и разработку лекарств. Использование ИИ повышает точность и эффективность медицинских процедур, открывая новые возможности для здравоохранения.

Ключевые слова: искусственный интеллект, диагностика, машинное обучение, роботизированная хирургия, разработка лекарств.

Resume. The article discusses the application of artificial intelligence in medicine, including diagnostics, machine learning, robotic surgery, and drug development. The use of AI increases the accuracy and efficiency of medical procedures, opening new opportunities for healthcare.

Keywords: artificial Intelligence, Diagnostics, Machine Learning, Robotic Surgery, Drug Discovery.

Relevance. The rapid advancement of AI technologies in medicine addresses critical issues such as resource limitations, uneven healthcare access, and the need for precise diagnostics and treatments.

Aim: to explore and evaluate the methodologies, applications, and impact of AI in modern medicine with an emphasis on improving diagnostic accuracy, treatment personalization, and healthcare efficiency.

Objectives:

1. Analyze AI technologies used in healthcare.
2. Assess the effectiveness of AI applications in diagnostics, surgery, and drug development.
3. Discuss challenges and future prospects of AI in medicine.

Materials and methods. Artificial Intelligence (AI) is transforming healthcare through the enhancement of clinical procedures, the improvement of patient results, and the optimization of resource allocation. Healthcare practitioners may utilize AI algorithms to analyze extensive data, detect patterns, and make prompt and well-informed decisions. A notable utilization of artificial intelligence in the healthcare field involves the interpretation of medical imaging. Artificial intelligence algorithms can aid radiologists in identifying anomalies in Xrays, MRIs, and CT scans, resulting in expedited and more precise diagnosis. Not only does this enhance patient care, but it also mitigates the workload on healthcare staff. The study reviews current literature, clinical studies, and technological reports on AI applications in healthcare. It employs qualitative analysis of AI methodologies such as

machine learning, deep learning, image recognition, and NLP, along with evaluation of their clinical outcomes. Additionally, the application of AI in medical robots is gradually spreading. Robotic technology has been widely used in many scenarios such as surgery, image positioning, rehabilitation training, nursing services, consultation, and hospital logistics. It unlocks people's hands while improving healthcare (by using AI technology to free up the hands of healthcare professionals, they can apply their skills and expertise more effectively to improve healthcare delivery). A surgical robot can perform precise resection and undertake the repair of lesions. Rehabilitation robots are an important means to cope with the aging population and the growing demand for medical resources. Non-surgical diagnosis and treatment robots can help read images, evaluate treatment effects after surgery, and improve diagnosis and treatment accuracy. Service robots can provide high-precision, high-intensity, and long-term medical services, freeing doctors from complex, tedious, and repetitive labor. Deep learning plays an increasingly important role in the development of robots. Object detection, tracking, and image segmentation of surgical targets are important aspects of surgical robots performing surgical procedures. The combination of deep learning algorithms for computer vision, pattern recognition and real-time decision-making with clinical medicine enables AI robots to perform well in pre-operative planning and intra-operative guidance, and they can complete medical-related tasks with high accuracy and safety.

Results and their discussion. AI demonstrates high accuracy in diagnostics (over 94%), enhances surgical precision, and accelerates drug discovery processes. These advancements contribute to reduced human error, minimized invasiveness, and cost savings. Challenges remain, including data privacy, integration into clinical workflows, and ethical considerations. Continued innovation and validation are essential for widespread adoption. AI algorithms analyze vast datasets—including electronic health records and wearable device data—to predict health risks before symptoms appear.

Predictive analytics now enable clinicians to anticipate cardiac arrest hours in advance or identify early warning signs for chronic diseases, allowing for targeted, proactive care.

AI supports personalized medicine by tailoring treatments to a patient's genetics, physiology, and lifestyle. In oncology, this means matching cancer patients with therapies most likely to work for their unique tumor profiles, improving efficacy and reducing side effects.

Conclusion. Artificial intelligence (AI) is increasingly being applied to healthcare, as it becomes more widespread in contemporary business and daily existence. Artificial intelligence has the capacity to assist healthcare providers in multiple ways, encompassing patient care and administrative duties. While the healthcare industry benefits from a majority of AI and healthcare breakthroughs, the tactics they support can vary significantly. Although several publications assert that artificial intelligence (AI) may match or surpass human performance in certain tasks, such as detecting illnesses, it will take a considerable amount of time before AI completely supplants humans in various medical roles within the healthcare industry. Despite notable advancements, the utilization of AI in healthcare is still in its nascent phase. Ongoing research consistently enhances the technology, leading to significant breakthroughs in various industries in the future. Artificial intelligence (AI) and machine learning have significant potential to make valuable contributions in the healthcare

industry, which is currently experiencing rapid digital change. These technologies have the ability to greatly enhance the quality of life for patients.

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