

<https://doi.org/10.5281/zenodo.17885994>

Ibragimova Dildora O'ktamjon qizi

Tashkent State Medical University

Assistent of the Department "Social and humanitarian Sciences",

Termez branch Digital Education Technology

Center Category 1 engineer programmer.

Idildora9966@gmail.com

Tashkent State Medical University

Faculty of treatment Phase 1 students

Xasanova Madina Nuriddin qizi

xasanovamadina307@gmail.com

Tel:+998(95)- 187- 68-07

Toshmirzayev Sherxon Umid o'g'li

toshmirzayevsherxon5@gmail.com

Tel:+998(95) - 384-88-08

Abdurahmonova Mushtariy

mushtariyabduraxmonova86@gmail.com

Tel:+998(91)- 900-76- 64

Annotation: *Applications of artificial intelligence (SI) technologies in modern medicine are increasing efficiency in areas such as diagnostics, treatment, clinical decision-making, genomics, biotechnology, telemedicine, and robotics. SI plays an important role in clinical image analysis, disease prediction, personalized treatment development, and medical process optimization. Applications of artificial intelligence (SI) technologies in modern medicine are increasing efficiency.*

Keywords: *artificial intelligence, medicine, diagnostics, genomics, biotechnology, telemedicine, robotics, automation, nanotechnology.*

INTRODUCTION

21st century medicine is characterized by the rapid development of digitization, biotechnology, genomics, nanotechnology and artificial intelligence. Artificial intelligence algorithms are helping physicians to accurately diagnose and select effective treatment plans by processing large amounts of clinical data, images, laboratory results, and genomic information. In addition, telemedicine and automated robotic systems serve to improve the quality of medical services.

In modern medicine, SI is used in the following main areas: clinical diagnosis, data analysis, personalized treatment, surgical robotics, nanotechnology, and clinical process

optimization. This article will cover the current tasks, advantages, limitations and prospects of artificial intelligence in medicine.

Artificial intelligence algorithms assist in the reading, diagnosis, and treatment planning of clinical data. Genomics gathers the possibilities of providing personalized treatment, Rich in genetic characteristics. Biotechnology, on the other hand, plays an important role in creating high-speed and effective drugs, vaccines and therapeutic models. Development in the field of Medicine (telemedicine) on the internet provides an opportunity for residents to exchange ideas faster and simpler. Long-distance consultations, medical care and information sharing can be facilitated and accelerated. Nanotechnology, in the creation of drugs, carries out changes at a huge molecular level. This further improves the delivery, indirect quality of the drugs. In medicine, robotics and automation lead to modifications to improve practices and treatment processes. This will help improve technologies, processes and reduce the number of errors. All these areas, form the foundations of modern medicine and are aimed at providing highly effective, integrative approaches to health care.

Clinical diagnosis and diagnostic assistant. Artificial intelligence is making a diagnosis based on clinical images and data. For example, radiological images, tomography results, and MRI skeins are analyzed through algorithms based on the information provided.

Data analysis: performs data analysis in medicine based on artificial intelligence, clinical data, laboratory results, unchanging historical data and other resources. This improves the analysis, prognosis, and treatment plans for the disease.

Personalization and forecasting: artificial intelligence helps to make specific treatment plans for each individual. Based on genomics and clinical data, artificial intelligence collects identity-specific data and shapes treatment.

Robotics and automation: in medicine, robots and automation-resurrected devices are used in clinical operations and treatment processes. Artificial intelligence also plays an important role in optimizing clinical processes for robots. Artificial intelligence improves consultations in telemedicine. Provides the opportunity to share and display information with professionals in other areas or remote locations. The use of artificial intelligence in medicine leads medicine to more efficient, better results, and helps in the creation of priority technologies in the fight against diseases. Clinical imaging and diagnosis help in the analysis of radiological imaging (e.g. X-ray, MRI, and CT scans) and in the diagnosis of diseases. This accelerates radiological diagnosis in medicine and allows for more accurate diagnosis.

Artificial intelligence helps in the medical analysis of genomic data and the creation of personal treatment plans. This makes it possible to draw up individual therapy plans based on the genetic characteristics of each individual. Artificial intelligence helps improve treatment plans based on clinical data and outcomes. It is used to improve dosing plans and treatment protocols.

Clinical delay optimization: artificial intelligence helps improve clinical processes and optimize treatment processes. It helps to make the best use of medical services and resources and improve clinical activities.

Artificial intelligence is used in the study of the forecasting of diseases based on clinical data, laboratory results, invariable historical data and other sources. This will help prevent the development of their diseases and make personal treatment plans.

Applications of artificial intelligence in clinical practices, making treatment plans, and other areas of Medicine provide high-performance technologies in improving health care and combating disease.

Despite the fact that artificial intelligence is important and useful in medicine, it also has several disadvantages. One of the most important disadvantages of artificial intelligence in medicine is the need for a clear and complete set of data to be available. Sometimes the medical data set is not accurate and of high quality, which can affect how AI can get accurate and effective results. Despite the fact that artificial intelligence is important and useful in medicine, it also has several disadvantages. One of the most important disadvantages of artificial intelligence in medicine is the need for a clear and complete set of data to be available. Sometimes the medical data set is not accurate and of high quality, which can affect how AI can get accurate and effective results. The delivery of diagnostic and recommendations of artificial intelligence, occupies a high place in privacy and information security issues. Personal data protections and privacy requirements increase.

METHODS

The article was prepared based on existing scientific sources, textbooks, scientific articles and field reports. Using an analytical approach, the methods of application of SI in medicine, technological capabilities and real clinical examples were evaluated. Also, by comparing the advantages and disadvantages of Si, its role in the health care system was studied.

RESULTS

1. Personal data protections and privacy requirements increase.

Methods

The article was prepared based on existing scientific sources, textbooks, scientific articles and field reports. Using an analytical approach, the methods of application of SI in medicine, technological capabilities and real clinical examples were evaluated. Also, by comparing the advantages and disadvantages of Si, its role in the health care system was studied.

Results

1. Clinical diagnosis and image analysis

Artificial intelligence is widely used, especially in the field of Radiology. X-ray, CT, and MRI images are analyzed with precision by SI algorithms. This:

* early diagnosis,

- * detection of pathologies such as lungs, brain, tumors,
- * serves to reduce errors.

2. Medical data processing Artificial intelligence is widely used, especially in the field of Radiology. X-ray, CT, and MRI images are analyzed with precision by SI algorithms. This:

- * early diagnosis,
- * detection of pathologies such as lungs, brain, tumors,
- * serves to reduce errors.

2. Medical data processing

SI analyzing laboratory results, clinical history, biomarkers and demographic data:

- * predicts disease progression,
- * separates risk groups,
- * optimizes treatment protocols.

3. Personalized medicine (personalization)

Through genomics and SI integration:

- individual treatment based on genetic characteristics,
- customized drug dosage model,
- the possibility of early detection of the risk of hereditary diseases is created.

4. Robotics and automation

SI-based surgical robots:

- * performs fine surgical procedures,
- * reduces human error,
- * improves rehabilitation techniques

Through genomics and SI integration:

- individual treatment based on genetic characteristics,
- customized drug dosage model,
- the possibility of early detection of the risk of hereditary diseases is created.

4. Robotics and automation

SI-based surgical robots:

- * performs fine surgical procedures,
- * reduces human error,
- * improves rehabilitation techniques.

5. Telemedicine and remote services

SI expands the possibilities of remote consultation, patient monitoring, rapid assistance.

6. Integration with nanotechnology

Using nanorobots and nanoparticles:

- * targeted drug delivery,
- * molecular level diagnostics,
- painless and accurate therapy methods are being developed.

Discussion

While the use of artificial intelligence in medicine provides significant advances, there are a number of limitations:

Limitations and problems

1. Data quality Using nanorobots and nanoparticles:

- * targeted drug delivery,
- * molecular level diagnostics,
- painless and accurate therapy methods are being developed.

Discussion

While the use of artificial intelligence in medicine provides significant advances, there are a number of limitations:

Limitations and problems

1. Data quality:

The effectiveness of SI depends on the accuracy and completeness of the data in the set. Misinformation can lead to misdiagnosis.

2. Privacy and information security:

Medical data protection is one of the biggest problems. SI systems require cybersecurity.

3. Algorithmic errors:

In some cases, SI can give false conclusions, generate uncertainties.

4. Ethics and legal issues:

Who is responsible for decisions? Whether a doctor or an algorithm is an urgent question. Medical data protection is one of the biggest problems. SI systems require cybersecurity.

3. Algorithmic errors:

In some cases, SI can give false conclusions, generate uncertainties.

4. Ethics and legal issues:

Who is responsible for decisions? Whether a doctor or an algorithm is an urgent question.

Development prospects

In the introduction of SI to medicine, the following will remain a priority:

- * create more accurate algorithms for clinical diagnosis,
- * create continuous learning (self-learning) Medical Systems,
- * expansion of biotechnology and robotics integration,
- * enhanced interactive performance with patients,
- * automation of high-quality medical services.

Conclusion artificial intelligence is penetrating deeply into all areas of Medicine and plays an important role in diagnostics, making treatment plans, optimizing clinical decisions and strengthening disease prevention. The capabilities of SI serve to accelerate medical processes, obtain accurate results, reduce human error and increase the overall

efficiency of the health system. At the same time, information security, ethical norms and elimination of algorithmic errors are a prerequisite for the full integration of SI in medicine.

BIBLIOGRAPHY:

1. Kamolov S., Rakhmatov Sh. Fundamentals of artificial intelligence, 2023.
2. Qohqatov Q., Tokhtaboyeva F.M. Fundamentals of nanotechnology and biotechnology, 2016.
3. Rakhmonkulov J. Artificial intelligence and expert systems.
4. Eshonov R.M. Information technologies in medical devices.
5. Eshonov R.M. Automated Control Systems in Medicine.
6. Eshonov R.M. Automatic control in biotechnical systems.
7. ResearchGate is a database of scientific articles.
8. Nanotechnology scientific portal.