



THE ROLE OF ARTIFICIAL INTELLIGENCE IN MEDICAL SOX

***Turaxodjaeva Gulnora Anvarovna,
Qayumova Gulchexra Kaxarovna***

Deputy director of academic affairs Andijan branch of the Center for professional development and specialization of secondary medical and pharmaceutical personnel of the Republic.

Relevance of the topic: Artificial intelligence is currently bringing about revolutionary changes in the field of Medicine. This technology has great potential in the areas of diagnostics, treatment process, data analysis and Prevention. Artificial intelligence can be used to detect diseases early, individualize treatment plans, create drugs, and analyze large medical data sets. It helps physicians diagnose patients quickly and accurately while optimizing the process of making medical decisions. In addition, artificial intelligence is also improving surgical practices using medical equipment and a robotic system. These scientific and technological advances will serve to improve the quality of Medicine and improve human health in the future.

Purpose of the study: the purpose of this study is to delve deeper into the importance and potential of artificial intelligence (SI) technology in medical Sox.

1. Diagnosis: artificial intelligence analyzes medical data, pictures, analysis results to help doctors make accurate and quick diagnoses.

2. Medical data analysis: by analyzing large data, forecasting trends in the development of diseases and helping doctors choose a treatment plan.

3. Personalized treatment: study the individual data of each patient and develop appropriate treatment strategies.

4. Physician assistance: artificial intelligence is a tool to support physicians ' decisions, recommending the most effective treatments based on modern medical data.

5. Automation and optimization: saving time and resources by automating administrative and diagnostic processes.

Research materials and techniques:

1. Medical databases: the use of large amounts of medical data plays an important role in the creation of artificial intelligence models. This information includes:

- MRI, CT, UZI and other imaging equipment data for diagnosis.
- Medical cards, laboratory analysis and research results.
- Genomics and proteomics data.
- Data from ECG, EEG and other biosignals.

- Medical simulations: simulated data is used to create models of various diseases in a Virtual environment and analyze them.

2. Research techniques

- Machine learning (Machine Learning): this method allows you to gain new knowledge by analyzing medical data and self-teaching. Machine learning algorithms are primarily used for the following purposes:

- Finding links between diseases and their symptoms.
- Early detection and prognosis of diseases.
- Optimize treatment plans.

- Terene Learning (Deep Learning): is a method based on the principle of neural networks of the human brain, used to make accurate diagnoses of medical images. For example, artificial neural networks are used in the analysis of complex images, such as lung or involuntary tumors.
 - Natural Language Processing (NLP): this method is used to automatically analyze medical documents and electronic medical cards and understand records between doctors or patients.
 - Robotics: in surgical practices, robotic systems can be used and operations can be carried out without human help or with minimal intervention. In this process, SI algorithms help to better manage the practice.
 - Predictive models: based on artificial intelligence algorithms, it is possible to predict the patient's condition and help doctors choose the necessary treatments.
 - Disease diagrams and biosignals: artificial intelligence based on life indicators of different patients, biosignals and disease diagrams helps to assess the effectiveness of diagnosis or treatment.
- It serves to improve medical services, improve diagnostic quality and speed up treatment processes through research techniques and technologies, the application of artificial intelligence in the medical field.

Prospects of artificial intelligence in medical education

1. Personalized education: with the help of artificial intelligence, it is possible to adapt the educational process of each student. Artificial intelligence technologies provide personal educational programs to the student, taking into account the level of knowledge, pace of study and individual characteristics. This allows them to spend more time on stronger areas and offers focused work deeper in weaker areas.
2. Virtual learning environments: artificial intelligence can be used to develop simulation technologies, allowing medical students to have high levels of experience even without practice. For example, using Virtual Reality (VR) and Augmented Reality (AR), students can take hands-on classes in anatomy, surgery, and other medical fields.
3. Clinical decision-making Assistant: artificial intelligence can be useful in teaching students about various diseases and their diagnostic techniques. Artificial intelligence is an assistant in advising professionals on the basis of various medical data, developing the ability for students to understand and analyze the diagnostic process.
4. Quick data analysis: artificial intelligence allows students to quickly and accurately analyze large data sets. It helps to analyze the data collected as a result of various studies and experiments.
5. Automated communication systems: the educational process can be effective using automated chat bots to quickly and accurately answer students' questions. These systems can provide advice and support to students during or outside the course process.
6. Educational process management: to monitor the activities of students and analyze their development, artificial intelligence technologies make it possible to collect and analyze various indicators and data. This makes it possible for coaches to recommend individual approaches for each student.

Risks and limitations of using artificial intelligence

1. Ethics and privacy: there is a risk of misuse or illicit use of medical information collected using artificial intelligence. As a result of non-compliance with the confidentiality of student or patient data, their personal rights may be violated.
2. Technology dependence: the high use of artificial intelligence in medical education can prevent a person from developing their abilities. For example, relying on complete artificial intelligence in the diagnostic process can weaken a person's ability to think or lead to some loss of skills as a result of inactivity.
3. Mistake and risk in making decisions: artificial intelligence does not always make perfect decisions. If artificial intelligence makes decisions based on misinformation, it can cause serious errors not only in the educational process, but also in the clinical practice of students in the future.
4. Technological crisis and lack of infrastructure: not all educational institutions and medical institutions have the necessary infrastructure for the introduction of artificial intelligence technologies. This can create inequality in the educational process.
5. Impact on students' social skills: automation of the learning process using artificial intelligence can adversely affect students' skills in communicating with patients. Artificial intelligence can speed up the medical process, but there is a possibility that it leaves aspects such as the human factor and empathy in the background.
6. Tracking and false information: some artificial intelligence technologies can analyze false or false

information. If the educational process is established on the basis of these misinformation, the risk of students receiving false knowledge increases.

Results and their discussion:

1. Role in diagnostics: artificial intelligence is playing an important role in the analysis of medical images and the identification of diseases. Machine training algorithms can give faster and more accurate results than humans when analyzing images such as X-rays, CT scans (computed tomography), MRI (magnetic resonance imaging). For example:

- Cancer diagnostics: artificial intelligence-based systems are successfully used to diagnose diseases such as breast cancer and lung cancer.

- Retinopathy: there is also the possibility of early detection of eye diseases associated with diabetes mellitus through artificial intelligence.

Discussion: although the high accuracy and speed of these results reduce the load of medical personnel, confirmation with human examination is still necessary. Since doctors cannot fully rely on artificial intelligence, this technology can remain as an auxiliary tool.

2. Artificial intelligence in treatment: artificial intelligence allows the patient to offer appropriate treatments by analyzing medical data quickly and accurately. Thus, individualized treatment (personalized medicine) can be very effective. For example:

- Making chemotherapy plans: artificial intelligence allows you to choose the most effective types of chemotherapy based on the patient's genetic data.

- Analysis of the effects of drugs: artificial intelligence is assisting in accelerating the testing processes of new drugs and predicting their effects in advance.

Discussion: creating an individual treatment strategy for patients may be one of the most important achievements of artificial intelligence, but the human factor in this process is still important. In addition, issues of confidentiality of information and safety of application are still discussed.

3. Forecasting and patient care: artificial intelligence can monitor the patient's condition and make forecasts regarding his future health. In this, artificial intelligence predicts the possible development of diseases based on human data. This area includes:

- Forecast of blood pressure, cardiovascular diseases.

- Pre-detection of dangerous conditions: for example, predicting a stroke or heart attack.

Discussion: this method can play a large role in saving patients' lives, as emergency situations can be avoided through the right predictions. But the likelihood of an error here can also be high, so the reliability of such systems remains an important issue.

4. Medical information analysis: the ability of artificial intelligence to process data on a large scale can be applied in various medical studies, genomics and epidemiology. Through this:

- Improve treatment strategies.

- Tracking the spread of diseases (for example, applied in the COVID-19 pandemic).

Discussion: Information Analysis is a powerful tool to make the medical field more effective, but it is very important that this information is used correctly and in accordance with ethical standards.

Conclusions: the rapid development of artificial intelligence technology in the field of Medicine creates the opportunity to radically change the quality of medical services. The results of the study indicate that the use of artificial intelligence in medicine opens up great opportunities for improving human health and has wide prospects in medical education, providing an opportunity to improve the educational process, prepare students as qualified doctors. However, in order to use it effectively and safely, it is necessary to carefully approach medical ethics, privacy and technological risks. It is also necessary to take into account the human factor in places where artificial intelligence cannot be fully trusted.

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