

Application of artificial intelligence in the hospital system.

Abstract

Artificial-intelligence (AI) has attracted a huge deal of interest in analyzing big and complicated data to present outputs without human input in different health care contexts including bioinformatics, image, and genomics analysis.

Artificial intelligence are systems with similar responses to intelligent behaviors of human like comprehension of complex situations, similar to thinking procedures and human reasoning methods, and successfully responding to them, learning and having the capability at gaining knowledge and reasoning to solve problems. Most of the and articles related to artificial intelligence have defined it as "knowledge of knowledge and design of intelligent agents."

Artificial intelligence has led to the expansion of knowledge in the field of medicine and the complexity of decisions associated with diagnosis and clinic management. In other words, human life has drawn the experts' attention to use systems based on decision in medicine.

Hence, different intelligent systems are increasingly used in medicine, so the effect of the types of intelligent systems in medicine is now studied.

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Introduction

The term "medical technology" is extensively used to deal with various tools to enable health professionals to present a better quality of life for patients and society by performing early diagnosis, reducing complications, reduction of hospitalization duration, optimization treatment and/or providing aggressive alternative alternatives {1}.

Artificial intelligence (AI) describes the use of technology and computers for simulating critical thinking and intelligent behavior compared to a human. John McCarthy first explained the term artificial intelligence in 1956 as the engineering and science of building intelligent machines.

While before the age of the mobile phone, medical technology was widely known as classical medical instruments (such as prostheses, stents, and implants), the advent of smartphones, sensors, programs in very small sizes, and communication systems revolutionized medicine with artificial intelligence.

Medical technologies have been revolutionized by artificial intelligence to understand as a part of computer science to cope with complex problems with several applications in areas with vast quantities of data but little application.

Intelligent medical technologies, i.e., artificial intelligence, are faced with the public's passion, partly because a complete medical model (predictive, personalized, personalized, and participatory) and, consequently, the autonomy of the patient in ways that are not possible; for example, smartphones will become a tool to occupy and distribute a personal health record, monitor critical functions with biological sensors and help achieve optimal treatment compliance.

The main actor in developing smart medical technology makes it possible to develop a new field in medicine: augmented

medical technology - the use of new medical technology to enhance the various aspects of clinical performance.

The US Food and Drug Administration (FDA) has approved and run several AI-based algorithms in the last decade. Augmented medicine (AM) is not only implemented by AI-based technologies. Still, it can be applied in several other digital fields like surgical navigation systems for computer-assisted surgery, continuous virtual reality tools for pain management, surgery, and psychiatric disorders {2}.

According to the lack of digital medical education, several private medical colleges are preparing for their future doctors to challenge the medical curriculum by linking it with the engineering curriculum or implementation of an upgraded curriculum and digital health literacy.

Artificial intelligence in medicine

Emotional intelligence can assist process medical data and present medical professional insights into important insights enhancing patient health experiences and outcomes.

Artificial intelligence in medicine uses machine learning models to present medical data and discover insights to enhance patient experiences and health outcomes. Artificial intelligence (AI) has rapidly become an essential part of modern healthcare thanks to recent developments in computer science and informatics.

Artificial intelligence algorithms and other AI-enabled applications are utilized to support medical professionals in ongoing research and clinical settings.

The most usual role of artificial intelligence in medical settings is a clinical decision support and imaging analysis. Healthcare providers are assisted by clinical decision support tools in making decisions about the patients, mental health,

medications, and other patient requirements by provision of rapid access to research or information relating to the patient {3}.

In medical imaging, artificial intelligence tools are utilized for analyzing CT scans, x - rays, and MRI, other images for the lesion or other results may be lost by a human radiologist.

Artificial intelligence in medicine can be divided into two subgroups: virtual and physical.

The virtual part of applications like electronic health record systems guides the neural network in therapeutic decision-making.

The physical part is related to robots that undergo surgery, smart prostheses for people with disabilities, and care for the elderly. {4}

Current applications of artificial intelligence in medicine in different fields:

- 1) Cardiovascular
Diagnosis of atrial fibrillation.
Cardiovascular disease risk prediction
- 2) Pulmonary function tests
- 3) Control of blood sugar tests
- 4) Prediction of GFR reduction and kidney diseases
- 5) Diagnostic imaging in digestive problems
- 6) Neurology (brain and nerves)
Epilepsy diagnosis and seizure monitor
Assessment of gait, posture, and tremors
- 7) Cancer diagnosis in histopathology
- 8) Medical imaging and validation of technologies based on artificial intelligence.

The COVID - 19 epidemic challenges for have also led many healthcare organizations many health systems worldwide to test the effectiveness of new techniques supported by artificial intelligence, like algorithms designed to assist monitor patients and tools equipped with artificial intelligence to screen COVID - 19.

The results and research are still gathered, and the general standards for using artificial intelligence in medicine are still determined. However, artificial intelligence opportunities are increasing continuously to benefit physicians, patients, and researchers who provide health services.

It is doubtful that artificial intelligence will become the main part of digital health systems that form and support modern medicine. {5}

Artificial intelligence applications in the field of health

There are several methods whereby artificial intelligence can positively impact medical practice by increasing the speed of research or helping physicians make perfect decisions.

Using artificial intelligence:

*** Artificial intelligence in diagnosing disease**

Unlike humans, artificial intelligence never requires sleep. machine - learning models can be utilized to view the patients vital signs receiving intensive care and if they increase specific risk factors to doctors.

Though medical tools such as heart monitors can track vital signs, artificial intelligence can gather data from those machines and search for more sophisticated circumstances like sepsis (blood infection).

*** becoming personalized.**

It is easy to support the exact medical with the help of virtual artificial intelligence. Since artificial intelligence models can learn and maintain priorities, artificial intelligence has the potential to present promptly personalized recommendations at all hours of the day. Instead of repeating the information with a new individual each time, a healthcare system can provide overnight access to a virtual assistant equipped with artificial intelligence that can respond to questions in terms of the medical history of the patient, personal needs, and preferences.

• Artificial intelligence in medical imaging

Artificial intelligence has currently a key role in medical imaging. According to the studies, artificial intelligence using artificial neural networks can be as useful as human radiologists in diagnosing breast cancer symptoms and other circumstances. While assisting doctors detect primary symbols of disease, AI can also provide the staggering number of medical images that doctors need to maintain track of by identifying critical parts of a patient's history and providing corresponding images.

*** Efficacy of clinical trial**

A significant amount of time during clinical trials is devoted to allocating medical records to patient outcomes and updating the relevant data set. Artificial intelligence can help accelerate this procedure by presenting a faster and faster search for medical professionals.

*** Rapid growth in the pharmaceutical industry**

Drug discovery is frequently a long and most expensive parts of drug advance. Artificial intelligence can help decrease the cost of new drugs development in two ways:

Develop better drug designs and find promising medicinal compounds. Artificial intelligence can overcome many of the major data challenges encountering the biological sciences industry {6}.

Benefits of artificial intelligence in medicine

Conscious care of the patient

The integration of artificial intelligence in physicians' workflow can provide valuable context while providers decide on care. A trained machine-learning algorithm can help physicians reduce research time by providing valuable search

results to physicians with evidence-based visions regarding treatments and methods with the patient still existing in the room with them.

Error reduction

It was evidenced that artificial intelligence can help enhance patient safety. In a current systemic study, 53 studies examined the effect of artificial intelligence on patient safety. It showed that artificial intelligence-based decision support tools could enhance the diagnosis and management of drugs.

Reducing the cost of care

There are many potential ways that artificial intelligence can decrease the costs in the healthcare industry, such as:

Reduce medication errors, provide virtual health support, and support for more clinical and efficient workflow.

Incrementing the interaction between doctors and patients

Several patients think about questions outside of normal business hours. Through chatbots, AI can help provide round-the-clock support to respond basic questions and provide resources to patients when their doctor's office is closed. AI can also be utilized potentially to triage (clinical prioritization) questions and flag information for further investigation, alerting health providers to health changes requiring further attention.

Providing text communication

One of the main advantages of deep learning is that artificial intelligence algorithms can utilize the previous context of the patient to differentiate between various kinds of information. For instance, a trained artificial intelligence algorithm can use natural language processing to recognize the medications related to the medical history of the patient if a clinical note includes a list of current medications with a new drug that their physician recommended.

Will artificial intelligence completely replace doctors?

Dr. Eric Topol's answer to this question is negative. He expresses his opinion in the book "deep medicine" by comparing the technologies used in self-driving cars with the uses of artificial intelligence in medicine as follows: Engineers working in the field of self-driving cars have created five hierarchies of self-driving cars:

Level 1: Computer and humans control the car together. Examples of this mode are parking assistance and emergency braking.

Level 2: The computer is practically in control of the car, but humans do the car's task in more complex and critical situations.

Level 3: In this case, the computer controls the car and can manage complex situations, and the human has only a supporting role.

Level 4: In this case, the car does not need human support in most situations, and the computer controls the car.

Level 5: The human role is completely removed, there is no need for human intervention under any circumstances, and the command can be removed.

According to Dr. Topoi, reaching stage 4 in the field of medicine, unlike self-driving cars, seems far-fetched. Although, artificial intelligence can perform specific processes, such as detecting a skin lesion or diagnosing a disease through specific algorithms better than humans. In the field of medicine, in general, the necessity of human supervision cannot be eliminated. In the field of medicine, advances similar to level 3 and level 2 in the example above will be beneficial, such as diagnosing diseases and providing treatment solutions in specific cases.

What is expected in the future?

In the future, physicians will need a lot of skills to use artificial intelligence in their work. In addition to understanding the principles of medicine, it will require sufficient knowledge of mathematical concepts, principles of artificial intelligence, data science, and ethical and legal issues. These skills will help physicians to benefit from data from different sources, monitor artificial intelligence-based tools, and identify items that are unlikely to be accurate algorithms. In addition, communication skills and emotional intelligence will be of great importance.

Artificial intelligence replaced hospital nurses and nurses

One of the most advanced and advanced London hospitals, by increasing artificial intelligence and deep learning in the various sectors, could reduce the number of doctors and nurses. Artificial intelligence is used in this hospital to diagnose illnesses such as cancer. The purpose of the establishment of this hospital is to use artificial intelligence and machine learning and create a new and non-precedent revolutionary. It can be seen that this center has an important effect on the diagnosis and treatment of different diseases. In the establishment of the hospital, large companies, such as amazon and google, have also developed a suite of services in the field of machine learning and machine learning.

In this center, machine learning algorithms, a new method for diagnosing disease and identifying endangered persons, are presented. The project's main focus is improving the hospital's accident and emergency departments. With artificial intelligence systems, the speed of visiting and disease diagnosis will increase and witness better performance in this management and treatment. Of course, the center's directors have acknowledged that ai will never replace doctors, and it will still require the expertise of the doctors. In general, traditional methods have been eliminated in this hospital, and new methods have presented an extraordinary performance in this center. Medical research is also widely used in the hospital, and there is a huge development in the treatment section.

By taking part in the responsibility of the doctors and the hospital, jobs will be lighter; the clinic management will spend more time with their patients and will see better results in the treatment section.

Discussion and conclusion:

AI algorithms are not only making our cars safer and shopping easier, but they are increasingly helping to diagnose patients and make the best decisions about their care.

Artificial intelligence promises to change medical science in many ways, but its practical applications are still in their infancy and need further investigation and development. Medical professionals must also keep pace with these developments and adapt to them to provide better health care to society.

It has always been said that artificial intelligence is supposed to make human life easier and better. One of the fields where artificial intelligence can be very efficient and improve the quality of human life is treatment, health, and medical services. In general, the use of artificial intelligence in therapeutic and medical processes, etc., offers great help for doctors, patients, and hospitals that use this technology.

Artificial intelligence has countless applications in the field of medicine and treatment. The meaning of these countless users is that from recognizing the connection between genetic codes to using artificial intelligence robots for difficult surgeries, everyone is among the users of artificial intelligence in the medical field. With all its uses, artificial intelligence has been able to create a modern era in treatment and health services and take it to another level.

Artificial intelligence applications have become so widespread that many of these applications are no longer known as artificial intelligence and have their own specialized names. The impact of artificial intelligence can now be seen in all aspects and places of people's lives.

Practical applications are those applications of artificial intelligence that perform certain operations and the action or effect of which will be clearly understood by the user. For example, Google's automatic search, which uses complex artificial intelligence algorithms and methods, will show you relevant results after performing an expensive but quick operation.

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