A REVIEW OF ARTIFICIAL INTELLIGENCE AND ITS APPLICATION IN THE FUTURE MEDICAL FIELD

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Abstract: Artificial intelligence (AI) refers to the use of technology and computers to replicate intelligent behaviour and critical thinking that is equivalent to that of a human being. In 1956, John McCarthy used the word "AI" for the first time to refer to the engineering and science of creating intelligent computers. Artificial intelligence (AI) will revolutionize nearly every aspect of medicine as it now stands. The intelligence displayed by robots or software is known as artificial intelligence. Artificial intelligence uses numerous algorithms to install intelligence in the machine, as well as reasoning and natural language processing.In recent years, artificial intelligence in medicine has advanced significantly. For the astute observer, however, much of this development appears dispersed and without a clear pattern.

I. INTRODUCTION

Artificial intelligence (AI) is being used to complete activities that until recently could only be completed by people, such as operating heavy machinery and even carrying out intricate medical operations. Furthermore, AI does these things better than humans as well. On the whole, AI is a superior driver, and it is already—or soon will be—better than qualified medical experts in several areas of medical diagnosis, medication discovery, and even the execution of therapy and surgery.

John McCarthy, an American computer scientist who coined the phrase "Artificial Intelligence," convened the Dartmouth Conference in 1956. Prior to it, Alan Turing's Turing test and Dietrich Prinz's chess-playing software were among the works in the field

of artificial intelligence, but substantial advancements only happened in the last thirteen years. AI uses computer systems that resemble machines to replicate intelligence's characteristics and operations. This technology is capable of fast learning, forecasting, analysis, drawing conclusions, and even self-correction.

Machine learning models are used in medicine to scan medical data and unearth insights to assist enhance patient experiences and health outcomes. Modern healthcare is increasingly relying on artificial intelligence (AI). Medical practitioners are supported by AI algorithms and other applications driven by AI in clinical settings and current research.

Clinical decision assistance and image analysis are now AI's most prevalent uses in medical settings. By giving them instant access to information or research that is pertinent to their patient, clinical decision support systems assist physicians in making decisions about treatments, drugs, mental health, and other patient requirements.

To analyse CT scans, x-rays, MRIs, and other pictures for lesions or other discoveries that a human radiologist could overlook, AI technologies are being employed in the field of medical imaging.

AI has both a virtual and a physical presence during the health care process. Virtual applications are frequently conceived of as software-type algorithms that are integrated

into the patient care episode frequently for decision-making reasons. On the other hand, physical presence frequently takes the shape of a material, tangible solution, like a robot or present machine that can communicate with the patient directly.

Building intelligent machines that can carry out activities that traditionally require human intellect is the focus of the broad field of artificial intelligence (AI).

Automated interfaces for speech recognition, decision-making, visual perception, and language translation are some uses of AI. AI is a multidisciplinary field of study.

Many healthcare organisations around the world have begun field-testing new AI-supported technologies, such as algorithms designed to support patient monitoring and AI-powered tools to screen COVID-19 patients, as a result of the difficulties that the COVID-19 pandemic created for many health systems.

Medical professionals' ingenuity is increased by AI. These smart devices operate human-like and swiftly comprehend the language used to capture medical data, text, photos, bioinformatics, and financial transactions. For a choice that is absolutely accurate, these machines can comprehend human language. By delivering pertinent information, it permits a precise surgical procedure on the patient.

This technology may be used to locate and gather a sufficient amount of high-quality patient data, which can then be used to anticipate, lower risk during joint replacement surgery and length of hospital stay, and increase the likelihood of a successful recovery.
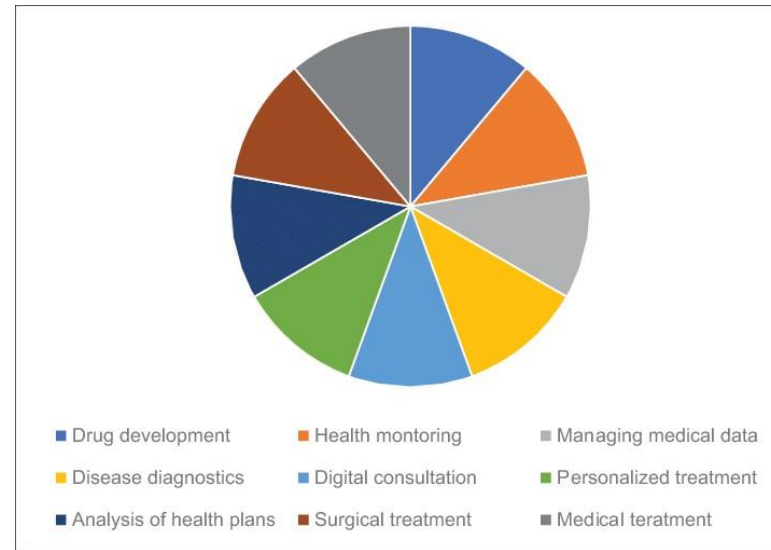

Fig :- Application of AI in Health Care

It offers robotic surgery with AI assistance for a challenging situation. Through various virtual platforms, this technology generates information and often connects with the patient. There is a scarcity of healthcare professionals in rural places, and this technology can increasingly be utilised to fill this gap. It raises the standard of medical students to meet any pressing need in rural areas. This technology boosts healthcare providers' productivity while simultaneously lowering costs and improving service quality. It offers guidance to clinicians in order to make a precise diagnosis.

Artificial intelligence provides nonstop job execution. unlike those who require a break. Watson and Siri, two examples of artificial intelligence, assist us with navigation, city surveys, dining suggestions, and medical examination.

Additionally, space exploration makes use of artificial intelligence. In places referred to as analogues, NASA tests exploration robots. The usage of industrial robots can improve productivity, quality, safety, and cost-savings. In the commercial and military

aviation industries, artificial intelligence may be advantageous. Since many years ago, both commercial and private aeroplanes have featured a function known as a "autopilot." Robotic household helpers may do a variety of jobs, including window- and pool-cleaning, lawn-mowing, and gutter cleaning. Human life is being made easier by this.

II. ADVANTAGES

Human resources are saved as a part of the work is done by machines.
Fraud detection in various banks is done through artificial intelligence.
Various smartphones use maps, GPS to find directions, this all is done through artificial intelligence.
To check anomalies and suggest medical intervention
Collect data during surgery which help to improve the future procedure
Proper monitoring of patient
Accurate and efficient diagnosis
Provide excellent service to the patient.
Provides Real-time data
Streamlines task
Saves time and resources
Assists research
May reduce physician stress
Decreasing Healthcare costs to get financial profit
Prevent human errors
High tech devices
Virtual assistant

III. AI'S ADVANTAGES IN MEDICINE

Care decisions made by clinicians can be informed by the use of medical AI, which can be integrated into workflows. By delivering doctors useful search results with evidence-based insights on treatments and procedures while the patient is still in the room with them, a trained machine learning system can

reduce the amount of time they need to conduct research.

A. Reducing errors: There is some evidence to suggest that AI might enhance patient safety. AI-powered decision support systems can aid in improving mistake detection and medication management, according to a new comprehensive assessment of 53 peer-reviewed research looking at the effect of AI on patient safety.

B. Cost-cutting measures: There are several ways AI may help the healthcare sector save money. Reducing pharmaceutical mistakes, individualized virtual health help, preventing fraud, and enabling more effective administrative and clinical processes are some of the most promising potentials.

C. Increasing patient-doctor interaction: Many patients have inquiries after regular business hours. Through chatbots that can respond to simple queries and offer patients information while their provider's office is closed, AI can assist provide round-the-clock support. AI may also be used to prioritize queries and mark data for scrutiny, which might assist doctors be into formed of health changes that require more attention. Contextually relevant information is one of the main benefits of deep learning since AI systems can utilize context to differentiate between various sorts of information. A well-trained AI system can utilize natural language processing to determine which pharmaceuticals belong in the patient's medical history, for instance, if a clinical note includes a list of a patient's existing prescriptions as well

as a new medication their physician suggests.

D. Several applications for AI include: AI can diagnose and identify diseases without the need for sleep, unlike humans. To monitor the vital signs of patients getting critical care and notify doctors if particular risk indicators grow, machine learning models could be utilized.

Heart monitors and other medical equipment can monitor vital signs, but AI can gather the data from those devices and search for more complicated illnesses like sepsis. A predictive AI model for preterm neonates has been created by an IBM client, and it is 75% accurate at spotting serious sepsis.

E. Disease-specific treatment: With virtual AI aid, precision medicine could be easier to support. AI has the ability to give patients 24/7 personalized real-time suggestions since AI models can learn and remember preferences. A healthcare system might give patients 24/7 access to an AI-powered virtual assistant that could respond to inquiries based on the patient's medical history, preferences, and personal requirements, saving them from having to repeat information to a different person each time.

F. AI in medical imaging: AI already had a significant impact on this field. According to research, AI-powered by artificial neural networks can be equally as proficient as radiologists in identifying breast cancer and other illnesses' symptoms. AI may assist physicians in spotting early illness indicators as well as making the overwhelming volume of medical pictures they must maintain more manageable by identifying important details of a patient's history and displaying the pertinent photos to them.

G. The efficiency of clinical trials: During clinical trials, a lot of work is spent assigning medical codes to patient outcomes and updating pertinent information.

AI can provide a speedier and more knowledgeable search for medical codes, which will hasten this procedure. Recently, two IBM Watson Health clients discovered that they could cut down on the number of medical code searches by more than 70% by using AI.

Drug discovery is frequently one of the most time-consuming and expensive stages of the drug development process. The main two ways AI might lower the cost of producing new drugs are by improving medication designs and identifying possible new drug combinations. Many of the big data problems that the life sciences sector is currently facing may be solved with AI.

IV. FUTURE ASPECT

AI applications in healthcare might range from fundamental to sophisticated. It may soon involve taking calls, examining medical data, monitoring population health, and using analytics. The advancement of AI also includes the creation of medical diagnostic and treatment programs, analyzing radiological image the s, invention of pharmaceutical medications and technologies, and even interactions with patients. On the other hand, some medical.

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V. CONCLUSION

In this article, we looked at the most current developments in AI's application to biomedicine, including disease diagnosis and prediction, living assistance, biomedical data processing, and biomedical research. AI has fascinating applications in several other biological domains as well. It is obvious that AI is becoming more and more important in biomedicine. This is due to the fact that AI is always improving as well as the fact that biomedical problems are intrinsically complex, and AI is best equipped to solve

them. New AI capabilities may be used to tackle novel biomedical issues, and the development of biomedicine demands increasing levels of AI capability. This equilibrium between supply and demand, together with associated breakthroughs, will enable both fields to make significant progress soon.

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