ARTIFICIAL INTELLIGENCE IN MEDICINE

The artificial intelligence has taken the world by a storm and how.This development has reinvigorated the discussion of the existing and the potential roles of AI in all walks of life.Among the various possible applications of ai,medicine stands out as one with endless potential and considerable challenges.

In recent times,there is virtually no area that is not being touched by the AI.Everything,right from capturing the dictation of the medical notes,to interpreting the radiographs,histology images,without clinician intervention,tools the use of AI has gained significant importance.

Although these tools seem to be significantly effective and provide us with insights that are much difficult to attain with the more traditional methodsthat have been in use for quite a long time now. AI is not entirely an elixir;ithas its own pitfalls,with the built-in databases that do not take into account different marginalized groups and ethinic groups suggesting that the system is not entirely suitable to the different problems faced by the people living in different latitudes of the world.

HISTORY

Artificial intelligence (AI) was first described in 1950; however, several limitations in early models prevented widespread acceptance and application to medicine. In the early 2000s, many of these limitations were overcome by the advent of deep learning. Now that AI systems have grown,with various different analysing complex,we are entering a new age in modern medicine..

Application

Unlike humans the AI needs no sleep,so the amount of load that it takes off the humans is significant.The continuous monitoring,organization of data and the accuracy,speaks of it’s metal.

AI in radiologic imaging

AI is already come a long way in imaging .Research has Proven that the new technology inspired by AI is just as efficient as human radiologists. In addition to helping clinicians spot early signs of disease, AI has also helped in the management of the reports by sorting the relevant pieces of information pertaining to the case.

Clinical trial efficiency

Clinical trials need a lot on table,right from time to money ,to manpower. AI can help speed this process up by providing a quicker and more relevant process to the trial. Two IBM Watson Health clients recently found that with AI, they could reduce their number of medical code researches by 70%.

Drug development

Drug discovery is often one of the most time consuming and expensive parts of the drug development. AI could play a pivotal role in the process by searching for effective drug combinations. With AI, many of the big challenges that the companies are facing at the moment could be dealt with head-on.

Reducing room for mistakes

There have been studies in the recent past which have lead us to believe that AI also ensures patient safety to a measurable extent. AI-powered decision support tools can Significantly help by increasing the rate of error detection and a holistic drug management.

Reducing the expense of care

There are a lot of potential ways AI could help to reduce costs related to the healthcare industry. One of the most promising opportunities include reducing medication errors, promoting customised virtual health assistance and a better managerial and administrative authority for a organized workflow.

Doctor-patient relationship

Many patients have questions outside of their medical queries . AI can help provide around-the-clock support through chatbots that can provide answers to the basic questions that they have and introduce them to resources when their physician isn’t available. AI is continuously being manipulated so that it could also potentially be used to triage questions and code the information for further assessment, which could help the management to put forward health changes that are the need of the hour.

Circumstantial relevance

AI can also provide us with a more organised and distinctive approach to different types of information. For example, if a clinical note includes a list of a patient's medications along with a new medication that their physician directs, a well-trained AI algorithm can use natural language processing to identify which medications is relevant to the patient's medical history.

Preoperative planning

Planning where surgeons plan the surgical procedure on the basis of existing medical records,the patient’s clinical history and imaging investigations is essential for the carrying out the surgery successfully.

All the preoperative workup of the patient,various investigations, organization of the entire database is much more efficient with the help of AI.

Intraoperative guidance

 Minimally invasive surgery (MIS)has reduced surgery related trauma to a considerable level.It has been appreciated by the patient’s as well by providing them with a scarless surgical procedure, which is now being integrated with robotic assistance. Computer-aided intra-operative guidance has always been a cornerstone of MIS.

Robotic surgery

With the advent of the development of AI techniques, surgical robots are set to achieve superhuman performance during MIS. The objective of AI is to enhance the expertise of the modern-day robotics in comprehending the in vivo settings,and completing the said command with accuracy, precision and safety.

Artificial intelligence in diagnosis

A research team in India, led by Dr Vathsala Patil of the Manipal Academy of Higher Education in Karnataka, looked at the potential of AI to improve the work of radiologists. In a recent article they write, "Evolution in hardware and software application has led to an escalating number of tasks performed by machines that were initially unimaginable. The most noteworthy tool has been the introduction of learning algorithms. Tasks can now be performed, which were previously limited to humans, thus indicating that these algorithms have significantly improved recently."

The tools offered by the AI are comparatively less challenging to master and can outdo the performance of the humans.

*Artificial intelligence -A complex world of it’s own…*

**Health inequities**

Varius studies indicate that without proper mitigation on potential biases relevant to underrepresented and marginalized groups such as women and minorities, application of AI in healthcare can result in life or death consequences.

This is because database-driven AI models which make their inferences by finding ‘patterns’ from the data they analyse, but disparities such as those on racial and ethnic basis have been existing in the world of health care since forever.Without effective mitigation approaches, inferences that we draw from such biased data are inevitably channeling the embedded inequities into the decisions that we make.

After coming so far in the development of artificial intelligence,we are still yet to have a more precise and clearer take about these database driven biases and the implications it might have on the society we live in. The biases of AI models are not quantified and reported with the same enthusiasm asthe accuracies.Likewise, studies about the impact that the use of AI has in healthcare, from multiple practical and theoretical perspectives, are still relatively limited compared to the impressive expansion of this field: more thought is needed for a fair, holistic and critical consideration of these new technologies.

**The Future of AI in medicine**

As we are entering in theses advanced times where nothing is beyond the reach of artificial intelligence,the development and integration of medical sciences with the AI is a promising area for orchestrating new solutions for the modern healthcare problems.

Where AI can revolutionize healthcare,the health policies have to undertake the responsibility for tackling the ethical and financial issues that come along with it.

References:

www.ibm.com

blogs.biomedcentral.com