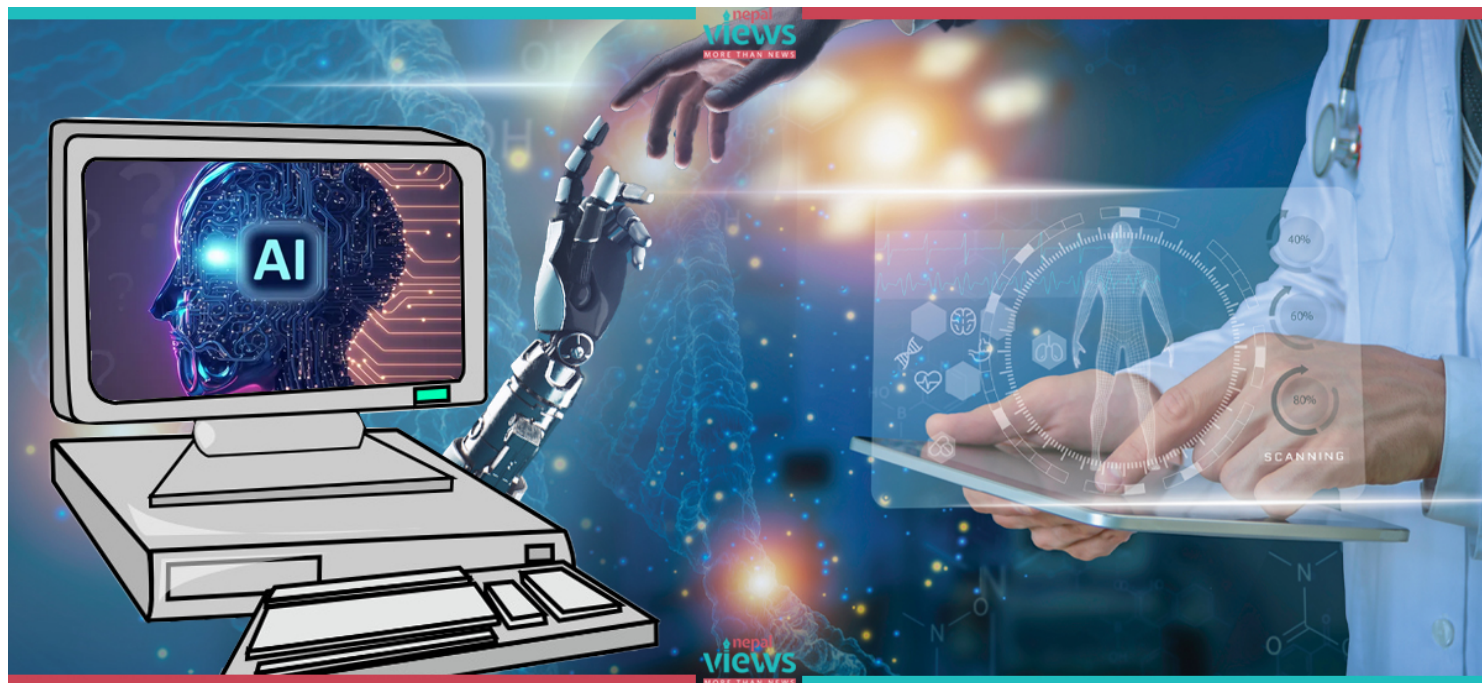# Impact of Artificial Intelligence in Healthcare

Cost-saving, time-saving, precise diagnostic, and operational techniques can be developed using Artificial Intelligence.

Dr. Sanjay Agrawal

India: The use of computers and software to replace manual input/output and processing is the basic aim of artificial intelligence to make our jobs easier. Artificial Intelligence has created a revolution in medical sciences and healthcare in the last few years.

The main feature and the best benefit of using AI in medical and healthcare purposes is the precision of taking inputs, and the accuracy of the processing and results as AI uses machine learning to process the data. Any AI system can observe certain phenomena and analyze it, based on the behavior of that particular occurrence.

What is the purpose of AI in healthcare?

Well, the main aim of using artificial intelligence in the field of medical sciences is to determine the relatedness/success rate of prevention and cure procedures for a given disorder, disease, or any other medical condition. AI aims at developing an algorithm based on the outcomes of treatments, diagnosis patterns, development of personalized medicine, drug development, and various other medical procedures.
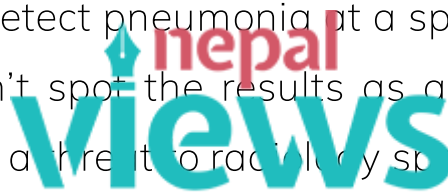
Why AI is better?

AI reduces the requirements of manpower in an industry/hospital. The portability and reliability of the system are undoubtedly the best. Cost-saving, time-saving, precise diagnostic, and operational techniques can be developed using Artificial Intelligence. A fully automated system can be built up to help medical professionals deal with patients and it will also reduce the stress on doctors for that matter.

What fields use AI/are using AI in medical science?

Radiology is one of the most popular branches of medical science right now. An algorithm can better interpret imaging results than a radiologist can, and this is proven by a survey conducted by a well-known university as well. It was known

that an AI algorithm could detect pneumonia at a specific stage as compared to the radiologists who couldn't spot the results as accurately as the algorithm. However, this surely creates a threat to radiology specialists.

This was just an example of how AI has the potential to change the entire scenario of medical sciences. AI can also help us improve diagnostics in the field of medicine. A wide range of ANNs (artificial neural networks) are already being used in image analysis in radiology and histopathology, waveform analysis, and clinical diagnosis as well. Stamey had developed a neural network-based algorithm called the ProstAsure index, which could classify prostate tumors as benign or malignant. ANNs have also been used in cytological and histological analysis, diagnosis of appendicitis, abdominal pain, bile stones, etc.

ALSO READ

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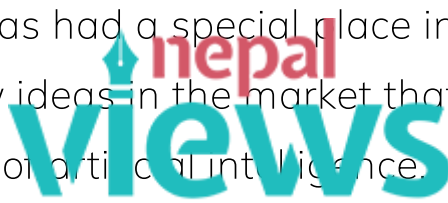What are the benefits of using AI in medical sciences?

1. Reduced mortality: The speed and accuracy of an artificial intelligence system surely outwits a human in the case of a medical diagnosis or treatment. As one gets to know earlier about his/her diagnosis, he/she gets to start the treatment earlier which eventually leads to reduced rates of death. We can even expect an increase in the average life expectancy in India if AI is used on a larger scale in our nation.

2. Faster diagnosis: Analyzing imaging results and biochemical/physiological reports becomes easier and more accurate as compared to manual diagnosis. Also, it takes less effort as machine learning is an integral part of AI. Once developed, an algorithm can directly run and bring up the diagnostic results.

3. Better treatment: A machine can do far more precise work than manual work. Surgery is one such field that needs AI to achieve better results. Laparoscopy has already developed much in our country. Artificial intelligence will help surgeries with the highest level of risk to be done easily. For example, neurosurgeons will benefit by developing instruments that help in surgeries on sensitive parts of the brain or spinal cord.

4. Cost-effectiveness: Hiring manpower has become much more costly and requires much effort. Whereas, AI can serve the purpose at a much lower rate. As it uses machine learning to take inputs from the patient, the process becomes quite easy after developing an algorithm.

5. Lesser damage due to surgical procedures: If the surgical instruments become more machine-handled and smaller in size as compared to the traditional surgery, one will suffer lesser body damage and it will help regain better health and faster recovery from the surgery.

6. Faster interaction: Physicians can use apps or software to take and store the medical history and ongoing treatment of the patient. It can also help detect red flags in advance to know if a patient needs to change/modify the treatment.

7. Epidemic outbreak prediction: Several epidemics have come and ruined the lives of people now and then. With good precautions and prevention techniques developed using artificial intelligence, we can predict the outbreaks and prevent them before they spread.

AI, medical sciences, and startups:

Strange yet interesting, AI has had a special place in medical startups for a few years. There are a lot of new ideas in the market that relate to the betterment of medical sciences by the use of artificial intelligence.

One of them is a medicine dispensing system. identRx is the first fully automated medication verification and dispensing device, using AI to identify and verify pills in real-time, with an accuracy greater than 99%. The device has been under development by PerceptiMed Inc. and is now commercially available for pharmacies in the US.

As mammography is also becoming an essential thing for women of this age, an entire machine learning software is developed to detect breast cancer at an early age.

Some apps give you medical assistance, check your symptoms, and lead you to the probable diagnosis as well. One of them is Infermedica's app Symptomate, which is one of the top-rated apps in Google Play. Some apps are also developed and used for medical consultation. Indeed, one cannot completely rely on applications and avoid seeing a doctor but the fact is that if doctors involve themselves in the development of these apps and make healthcare accessible and cheaper, the scenario will be far better.

Future implications:

One of the best future implications of AI in medical sciences is BCI, i.e. Brain-computer interfaces. It will help those patients who have had a spinal injury or have trouble with moving or speaking. Virtual nursing assistants are also one of the best implications of AI in medicine.

However, healthcare workers are afraid that AI will replace them in their work but the reality is different. As AI will take up the job of doing trivial stuff and medical assistance, the nurses will get more time for bedside care of the patient.

A lot more can be expected from AI in coming years and as we keep enhancing our medical science with AI, we'll keep developing better healthcare and treatment for future generations. With the use of AI, developing nations will be able to get better healthcare at a far lesser cost than present. If used properly, AI can be a benefit to our generation and medical science.

Recent advancements in AI w.r.t. Medical sciences:

Ophthalmology has benefited a lot from the rise of artificial intelligence in medicine. AI in ophthalmology allows a doctor to conduct a detailed checkup of the patient's retina without using any invasive instruments for the same. A camera and software are enough for that.

More such advancements are also made in the field of oncology. A software that can detect skin cancer with much higher accuracy is also under development. One of the huge benefits of such software is early detection and early treatment of such deadly diseases.

Moreover, there is an AI system called Corti, that can detect heart attacks by listening. Corti can recognize the caller's voice during an emergency call and it also detects the background voice to identify emergency dispatchers to identify heart attacks quickly.

AI might also put an end to traditional blood testing techniques as a California-based company is developing a software called KardiaK, which can conduct blood tests without drawing blood from the patient. It is trained to detect

hyperkalemia without taking blood from the patient.

Such advancement in AI will lead to cutting-edge solutions in the field of medical sciences and will also help improve diagnostic and treatment techniques as well.

(Dr. Sanjay Agrawal is a leading Pharmaceutical Consultant and Editor-in-Chief of IJM Today)

#artificial intelligence

Dr. Sanjay Agrawal | Wednesday January 10, 2024

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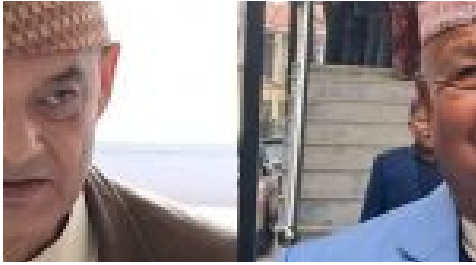
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