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Benefits of using AI in medical and healthcare purposes

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The use of computers and software in order to replace manual input/output and processing to make jobs easier is the basic aim of artificial intelligence (AI). Artificial intelligence has created a revolution in medical sciences and healthcare since last few years.

The main feature and the best benefit of using artificial intelligence in medical and healthcare purposes is the precision of taking inputs, the accuracy of the processing and results as artificial intelligence uses machine learning to process the data. Any artificial intelligence system can observe certain phenomena and develop its own logic based on the behaviour of that particular occurrence.

Purpose of AI in healthcare
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?
Artificial intelligence 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.

Areas using AI in medical science
Radiology is one of the most popular branch of medical sciences 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 artificial intelligence algorithm can 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 the radiology specialists.

This was just an example of how artificial intelligence has the potential change the entire scenario of medical sciences. Artificial intelligence 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 ProstAsure index, which could classify the prostrate tumors as benign or malignant. ANNs have also being used in cytological and histological analysis, diagnosis of appendicitis, abdominal pain, bile stones etc.

Benefits of using AI in medical sciences

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 average life expectancy of India if AI is used on a larger scale in our nation.

Faster diagnosis: Analysing imaging results and biochemical/ physiological reports become easier and accurate ad compared to manual diagnosis. Also, it takes lesser efforts as machine learning is an integral part of artificial intelligence. Once developed, an algorithm can directly run and bring up the diagnostic results.

Better treatment: It is obvious that a machine can do far 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 highest rate of risks to be done easily. For example, neurosurgeons will be benefited by developing instruments that help in surgeries of sensitive parts of brain or spinal cord.
Cost effectiveness: Hiring manpower has become much costly and requires much efforts. Whereas, artificial intelligence 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.

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 regaining better health and faster recovery from the surgery.
Faster interaction: Physicians can use apps or softwares 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.

Epidemic outbreak prediction: A number of epidemics have come and ruined the lives of people every 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 &startups
Strange yet interesting, artificial intelligence has a special place in medical startups since a few years. There are a lot of new ideas in the market that relate to 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 artificial intelligence to identify and verify pill in real time, with an accuracy greater than 99 per cent. The device has been under development my PerceptiMed Inc. and is now commercially available for pharmacies in the US.

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

There are apps that 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 app in Google play. Some apps are als developed and used for medical consultation. It is true than 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 artificial intelligence in medical sciences is BCI, i.e. brain computer interfaces. It will help those patients who have had a spinal injury, or have a trouble with moving or speaking. Virtual nursing assistants are also one of the best implications of artificial intelligence in medicine. However, the healthcare workers are afraid that AI will replace them in their work but the reality it different. As AI will take up the job to do 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 a better healthcare at a far lesser cost than present. If used properly, AI can be a benefit to our generation and medical science.

Advancements in AI with respect to medical sciences
Ophthalmology has benefited a lot from the rise of artificial intelligence in medicine. AI in opthalmology allows a doctor to conduct a detailed check up of the patient's retina without using any invasive instruments for the same. A camera and a software are enough for that.

More such advancements are also made in the field of oncology. A software that can detect skin cancer to 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 recognise caller's voice during an emergency call and it also detects the background voice to identify emergency dispatchers to identify heart attack 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 definitely lead to cutting-edge solutions in the field of medical sciences and will also help improve the diagnostic and treatment techniques as well.

(The author is a leading pharmaceutical consultant and Editor-in-Chief of IJMToday)

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