MODERN MEDICINE AND PRACTICE
https://www.innovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 2 No. 3 (2022) EJMMP ISSN: 2795-921X

ARTIFICIAL INTELLIGENCE IN MEDICAL FIELD

Zain UlAbidin
Andijan State Medical Institute, Uzbekistan

Maria Manzoor
Rawal Institute of Health Sciences, Pakistan

Annotation: *Artificial intelligence, which are computer-based programs, are widely being used in field of medical sciences. Firstly, these computer programs were being used in the diagnosing process of hundreds of diseases, but now a days artificial intelligence like robotics is being used in medical field. Especially robotics is emerging in the field of surgery. Artificial intelligence is also improving the communication between physician and patients, transcribing the medical documents i.e. prescriptions. As computer systems often execute all tasks more precisely than humans. Some speculate that in near or far future human will completely be replaced in certain medical fields by AI and computers. The main aim of the article is tom understand and discuss the ways and fields in which artificial intelligence is being used or will be used.*

Keywords: *artificial intelligence, deep convolutional neural network, robotics, mechanically organized machine with computer programming, medical use.*

Introduction Artificial Intelligence;

"The science and engineering of making intelligent machines, especially intelligent computer programs".John McCarthy- artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Since the development of the digital computer in the 1940s, it has been demonstrated that computers can be programmed to carry out very complex tasks—as, for example, discovering proofs for mathematical theorems or playing chess—with great proficiency. Still, despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match human flexibility over wider domains or in tasks requiringmuch everyday knowledge. On the other hand, some programs have attained the performance levels of human experts and professionals in performing certain specific tasks, so that artificial intelligence in this limited sense is found in applications as diverse as medical diagnosis, computer search engines, and voice or handwriting recognition.

IA in diagnostics;

Artificial intelligence in medical diagnosis is a powerful tool for reducing physician burnout, but equally for providing the radiology professional with exceptional support in managing workloads that are only on the increase.

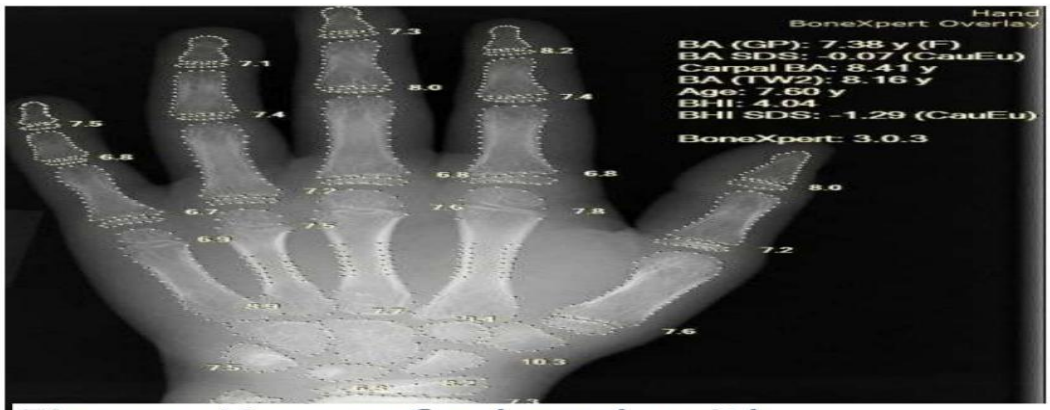
Radiologists have to deal with multiple and rising imaging volumes, and they're expected to do so at speeds that were previously unheard of. Today, they have to sift through volumes of images while still prioritizing those that are urgent and managing patient care.

This is where artificial intelligence in medical diagnosis really shines. AI and deep learning solutions have been providing radiologists with essential support as they manage these weighty imaging volumes, offering them the ability to streamline workflows, save time, increase capacity and increase diagnosis reliability. This reduces pressure on the radiologist significantly. Solutions such as Aidoc go IA in diagnostics;

Artificial intelligence in medical diagnosis is a powerful tool for reducing physician burnout, but equally for providing the radiology professional with exceptional support in managing workloads that are only on the increase. Radiologists have to deal with multiple and rising imaging volumes, and they're expected to do so at speeds that were previously unheard of. Today, they have to sift through volumes of images while still prioritizing those that are urgent and managing patient care.

This is where artificial intelligence in medical diagnosis really shines. AI and deep learning solutions have been providing radiologists with essential support as they manage these weighty imaging volumes, offering them the ability to streamline workflows, save time, increase capacity and increase diagnosis reliability. This reduces pressure on the radiologist significantly. Solutions such as Aidoc go IA in diagnostics;

Artificial intelligence in medical diagnosis is a powerful tool for reducing physician burnout, but equally for providing the radiology professional with exceptional support in managing workloads that are only on the increase. Radiologists have to deal with multiple and rising imaging volumes, and they're expected to do so at speeds that were previously unheard of. Today, they have to sift through volumes of images while still prioritizing those that are urgent and managing patient care.



Figure; X-ray of a hand, with automatic calculation of bone age by a computer software.

This is where artificial intelligence in medical diagnosis really shines. AI and deep learning solutions have been providing radiologists with essential support as they manage these weighty imaging volumes, offering them the ability to streamline workflows, save time, increase capacity and increase diagnosis reliability. This reduces pressure on the radiologist significantly. Solutions such as Aidocgothrough the vast quantities of images, flagging those that the AI consider to be of concern. The radiologist can then assess the flagged images as a matter of priority, thereby catching urgent cases faster without compromising on their existing workloads or cases. Aidoc has obtained 6 FDA/CE clearances for the flagging and prioritization of acute abnormalities in CT scans and is already deployed and showing value at over 400 medical facilities across the world. Artificial intelligence in medical diagnosis is still on the edge of its potential. There's plenty of room for growth and for the technology to improve on what itcan do to support the medical profession. AI as it stands today is already being integrated into practice and workflows, and as it continues to evolve and

change and adapt, it will likely step up to give the medical profession a reliable set of tools that can aid in diagnosis, workflow, admin and workload.

Figure; CT scan of a normal abdomen and pelvis, in sagittal plane, coronal and axial planes, respectively.

Computer Programs for Medical Documentation;

Now a days tens of computer programs are being used in in medical documentation and for transcription. Some of them I discussing in this article which are being used by medical professionals.

Patient IQ;

Patient IQ is a cloud-based software platform and patient engagement technology that automates the collection of patient-reported outcomes. It also offers procedure-specific education modules to help prepare patients for treatments and proactively monitor their recovery. The platform's built-in analytics and biostatistical modeling engine generate actionable insights for quality improvement, research, and marketing purposes.

Qumata;

Qumata offers a convenient alternative to lengthy questionnaires and doctor's visits. Customers simply need to share their digital data so that our algorithm can calculate an accurate and individualized medical risk profile.

InteliChart's;

InteliChart's Healthy Outcomes platform is a comprehensive patient engagement solution suite that was designed to empower consumers to take control of their healthcare while simplifying the patient management process for providers. Through a single, easy-to-implement integration that works with over 30 different EHR solutions, healthcare organizations large and small can leverage a powerful suite of patient engagement tools that work in unison r to engage patients at every level of their health journey.

The Healthy Outcomes platform contains seven different solutions that cater to patients no matter where they are in their health journey, including Patient Portal, Family Portal, Patient Intake, Patient Notify, Patient eVisit, Patient Survey and Patient Activate. Because all of these products work seamlessly together, practices can create a consistent and predictable experience for patients, while also streamlining data entry and patient processing. InteliChart has focused exclusively on the patient since 2010 and is committed to designing solutions that empower both patients and providers to attain well-being and good health. Healthy Outcomes was created to give patients an easier way to engage with their healthcare via methods that are most convenient for them. Patients can easily view health records, manage and schedule upcoming appointments, fill out intake forms, access reminders about upcoming appointments, and set their communication preferences, all through their modern and easy-to-use Patient Portal. EHR vendors, hospitals, health systems and physician practices have selected InteliChart as their patient engagement platform, collectively representing over 45 million patients.

RXNT EHR;

RXNT is a fully-integrated, cloud-based medical software provider, offering an Electronic Health Records (EHR) solution with E-Prescribing and Patient Engagement for practices of all sizes and specialties. RXNT was founded in 1999 in Annapolis, MD; named to Inc. Magazine list of America's 5000 Fastest-Gro wing Private Companies in 2019 and 2020, and a Gartner 'Software Advice

FrontRunner' in 2017, 2018, and 2019. Our trusted solutions will help your practice thrive at a reasonable cost.

IA in Surgery;

AI was introduced into surgery more recently, with a strong root in imaging and navigation and early techniques focusing on feature detection and computer-assisted intervention for both pre-operative planning and intra-operative guidance.That is to say, AI is gradually changing the practice of surgery with technological advancements in imaging, navigation, and robotic intervention. Robotic surgery has been rapidly adopted by hospitals in the United States and Europe for use in the treatment of a wide range of conditions.The most widely used clinical robotic surgical system includes a camera arm and mechanical arms with surgical instruments attached to them. The surgeon controls the arms while seated at a computer console near the operating table. The console gives the surgeon a high-definition, magnified, 3-D view of the surgical site. The surgeon leads other team members who assist during the operation.

Figure; Robot-assisted heart surgery

Advantages;

Surgeons who use the robotic system find that for many procedures it enhances precision, flexibility and control during the operation and allows them to better see the site, compared with traditional techniques. Using robotic surgery, surgeons can perform delicate and complex procedures that may have been difficult or impossible with other methods. Often, robotic surgery makes minimally invasive surgery possible. The benefits of minimally invasive surgery include:

- Fewer complications, such as surgical site infection
- Less pain and blood loss
- Quicker recovery
- Smaller, less noticeable scars
- Risks

Robotic surgery involves risk, some of which may be similar to those of conventional open surgery, such as a small risk of infection and other complications.

Is robotic surgery right for you? Robotic surgery isn't an option for everyone. Talk with your doctor about the benefits and risks of robotic surgery and how it compares with other techniques, such as other types of minimally invasive surgery and conventional open surgery.

Robotic surgery may not be available at medical centers in your geographic location.

Conclusion;

AI has bright future in medical fields. In the future certain medical fields will replace human work by computer aided programs. Surgeries will be performed by robots. The relation between physician and patients will be move to robotic physician and patient-(in future such robots will be introduced who will be programed as to diagnose and to prescribe the medicine to patients). All the data of patients will be moved on computers which will have easy access for the physician. All diagnoses process will be performed by computer aided programs i.e. ST scans, MRI, Ultrasounds etc.

Reference/ Literature Review:

1. https://www.britannica.com/technology/artificial-intelligence#:~:text=Artificial%20intelligence%20(AI)%20is%20the,require%20human%20intelligence%20and%20discernment.
2. https://en.wikipedia.org/wiki/Artificial_intelligence

3. Artificial Intelligence in Medicine: 17th Conference on Artificial Intelligence in Medicine, AIME 2019, Poznan, Poland, June 26–29, 2019, Proceedings.
4. https://www.sciencedirect.com/journal/artificial-intelligence-in-medicine#:~:text=Artificial%20intelligence%20in%20medicine%20may,improve%20the%20performance%20of%20a
5. https://www.frontiersin.org/articles/10.3389/fmed.2020.00027/full
6. https://sitn.hms.harvard.edu/flash/2019/artificial-intelligence-in-medicine-applications-implications-and-limitations/
7. https://www.mayoclinic.org/tests-procedures/robotic-surgery/about/pac-20394974#:~:text=Robotic%20surgery%2C%20or%20robot%2Dassisted,procedures%20performed%20through%20tiny%20incisions.
8. https://en.wikipedia.org/wiki/Robot-assisted_surgery
9. https://www.uclahealth.org/robotic-surgery/what-is-robotic-surgery
10. https://www.davincisurgery.com/da-vinci-systems/about-da-vinci-systems