

Health Analysis in Artificial Intelligence

Pratiksha V. Patil, Shreya S. Dadpe, Prof. V. M. Sultanpure

Department of Computer Science, Sangameshwar College, Solapur, Maharashtra, India

ABSTRACT

Article Info

Volume 8 Issue 2

Page Number: 418-423

Publication Issue :

March-April-2021

Article History

Accepted : 15 April 2021

Published : 30 April 2021

A field of science and engineering concerned about the computational comprehension of what commonly called intelligent behaviour and with the creation of artifacts that exhibit such behaviour is known as Artificial intelligence. It is the one of the important field of computer science. AI has recently exceed human performance in several domains, and there is great hope in healthcare. AI may allow for detection, diagnosis, better prevention and treatment disease. Many tools used in many disease like cancer, neurology, cardiology, diabetes are implemented by using AI. This research paper include current status of AI application in healthcare. AI can also be used to self-regulating spot problems and threats to patient safety, such as poor care of outbreaks of hospital- acquired illness with high accuracy and speed . This analysis will also explore how AI machine learning can save lives by helping individual patients. A few ongoing research of AI application in healthcare that provide a view of a future where healthcare delivery is more unified, human experiences.

Keywords : Artificial Intelligence, Computer; Data, Diseases, Healthcare, Robots.

I. INTRODUCTION

Artificial intelligence is a field of computer science where human brain is studied and tried to replicate on a machine intelligence is today a widely used for various applications like computer vision speech recognition organisation decision making reasoning and many more .Human has power of decision making and we want machine can also take decision this is Artificial Intelligence. AI in medicine has two main branches virtual and physical. The virtual branch includes informatics approaches from deep learning information management to control health

management system, including electronic health records, and active guidance of physicians in their treatment decision. The physical branch is best represented by robots used to assist the elderly patient or attending surgeon. Physical branch is best represented by robots used to assist the elderly patient or attending surgeon. it include physical object medical devices sophisticated robots for delivery of care (care robots) and robots for surgery .Healthcare leaders face and unprecedented list of increasingly critical issue across quality, cost and revenue. Artificial intelligence in healthcare is revolutionizing the medical industry by providing a helping hand.

Largest impact of artificial intelligence is being in the Healthcare. According to the latest report of PWC the artificial intelligence will contribute an additional 15.7 trillion to the Economy by 2030 and the greatest impact will be in the field of Healthcare so we know that healthcare is getting more important and using artificial intelligence in the more advanced manner. Now what we has led to the sudden importance of artificial intelligence in the Healthcare industry is first reason is high availability of medical data .All of us have medical data in the form of medical history whenever we go to the Any hospital our history is written down in account so basically with availability of data implementing artificial intelligence become much easier. The AI base technologies such as deep learning and machine learning which requires tons and tons of theta so with availability of data it becomes easier to implement to use artificial intelligence in the healthcare industry. Another important reason is that led to the development of AI in Healthcare is the introduction of complex algorithms now what happens in the machine learning machine learning is not capable in handling high dimensional of data and particularly the day medical data that we have or healthcare data we have is of very high-dimensional in character now for us in order to process analysed data of this dimension and it's hard to do but because of AI we can do it this very easily.AI already established some areas in healthcare and it is only the beginning to alter dramatically starting from the design of treatment tactics through the bolster in repetitive jobs towards drug development . excellent decision in health care and medicine. Specialists severely observe in excess of 50 patients for daily, which can be to a great degree weakening Artificial Intelligence (AI) could arrange patient routes or treatment tactics better, and also provide physicians with literally all the information they need to make a thinking about the individual amount of notice and information per person requires. Unlike a medical doctor, AI is

unpeopled by numbers of patients, stretch work hour, and task redundancy.

II. Concept behind Artificial Intelligence in healthcare

AI helps doctors to evaluate the health risk of a patient and then uses the intelligence to not only develop the quality of care, but also observe and advice patients on the side effects of certain medications.AI is a branch of computer science and technology modifying with the simulation of smart behaviour in computer system. Information, Coordinating the experience, and human contact of clinicians with the power of AI will increase the high quality of patient care and also lower its cost. Data from whole patient populations can be analysed using AI to discover new evidence and determine high-quality healthcare practices. However, for a variety of reasons, we believe that it will be many years before AI replaces humans for wide medical process domains. In this article, we describe both the possibilities that AI offers to automate aspects of care and some of the barriers to rapid implementation of AI in healthcare. There are already a number of research studies suggesting that AI can perform as well as or better than humans at key healthcare tasks, such as diagnosing disease. Today, algorithms are already outperforming radiologists at spotting malignant tumours, and guiding researchers in how to construct cohorts for costly clinical trials. Artificial intelligence (AI) and related technologies are increasingly common in business and society, and are start to be applied to healthcare. These technologies have the future to transform many aspects of patient care, as well as executive processes within provider, payer and pharmaceutical organisation.

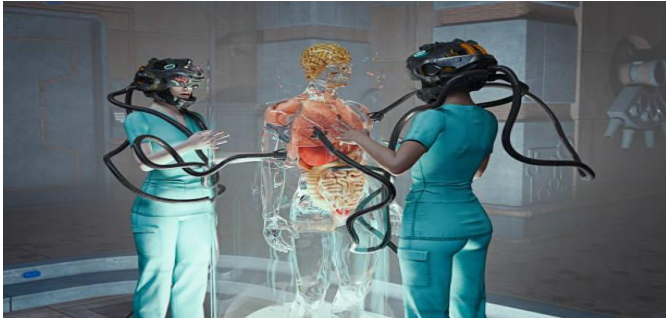


Fig 1 : AI-assisted robotic surgery

AI can help improve surgical performance. Typically, the outcome of a surgery, particularly, a new or complex procedure, can vary with the surgeons skill. Use of AI can reduce these case-to-case variations and even help improve the regulation of even the best surgeons. The surgeon still controls the robotic suturing. There are countless little complex tasks during a surgical procedure, which absolutely require the skills of a nuanced surgeon. There is still a long way to go before we can witness an AI utopia where robots would replace surgeons or nurses. For example, AI controlled robots can provide a three-dimensional amplification for articulation and perform with more precision and miniaturization. AI enabled robots can perform basic acts of precision cutting and stitching. In 2017, we witnessed surgeons using AI assisted robotics to suture extremely narrow blood vessels – .03 to .08 millimetres across– at the Maastricht University Medical Centre, Netherlands.

III. Applications of Artificial Intelligence in health care

Treatment pattern

AI is resulting in advancements in healthcare treatments, such as improving the organization of treatment strategy, monitoring treatments, analysing data to provide superior treatment strategy. Doctors can now search information, such as, a medical assistant used to gather patient information, Modernizing Medicine, mandate tests, record diagnoses and prescriptions and arrange billing

information. AI has the ability to rapidly and more accurately recognize signs and symptoms of disease in medical images, such as CT scans, MRI, ultrasound and x-rays, and therefore permits faster diagnostics reducing the time of patients wait for a diagnosis from weeks to mere hours and expeditiously the introduction of treatment choices. The tendency to explore public databases with information from thousands of doctors and patient cases can assist physicians manage better personalized treatments or discover similar cases. AI will encourage clinicians adopt a more extensive strategy for malady administration, better facilitate care designs and help patients to all the more likely oversee and satisfy with their long haul treatment programs .

Organize medical records and data

AI is a branch of computer science and technology adapting with the simulation of smart behaviour in computer system. Coordinating the experience, information, and human contact of clinicians with the power of AI will enhance the high quality of patient care and also lower its cost. It is the primary step in revolutionizing. The obtainable healthcare systems. Data from whole patient populations can be analysed using AI to discover new evidence and determine high-quality healthcare practices the most apparent use of artificial intelligence in healthcare is data management. Gathering it, storing it, normalizing it, and tracing its ancestry. quite recently, the AI research branch of the search giant, Google, propelled its Google Deep mind Health project, used to mine the information of medical statistics a good way to offer extremely good and expeditious health services. The past decade has seen an emission in the measure of health information that is currently obtainable. In healthcare industry, data (patient information, diagnosis information, new research findings, and more) is generated in massive volumes every day .Since the essential step in health care is compiling and investigating data, data management is the most broadly utilized application of artificial

intelligence and digital automation. Robots collect, store, re-layout, and trace data to offer faster, more consistent access. The combination of huge data analytical tools have helped organizations achieve the insights essential to collaborate much more efficiently with patients and take excellent decisions, and this dependence on large data and storing it to reducing wastage; from cutting coast to streamlining hospital staff timings; from empowering remote patient monitoring to anticipating epidemics, the utilization of bog data has been growing notably.

Drug creation

Enlarging pharmaceuticals by means of clinical tests is exceptionally tedious, as often as possible taking considerably more than 10 years, and cost billions of U.S dollars. Machine learning algorithms are now being used with several achievements to decrease drug discovery times. Developing pharmaceuticals by means of clinical tests is exceptionally tedious, as often as possible taking considerably more than 10 years, and cost billions of U.S dollars. Using AI to restore parts of the drug discovery process can be much quicker, cheaper, and safer. At the same time AI cannot completely remove all the stages concerned in drug creation, it can assist with stages like, discovering new compounds that could be possible drugs. Two drugs were find to reduce infectivity in one day, when analysis of this kind generally takes months to years, a difference that might signify saving thousands of lives .It can also assist to find new applications for before tested compounds. Between the West Africa Ebola in 2014 virus outbreak, a program powered by AI was used to scan accessible medicines that might be redesigned to fight against the disease. Not long from now, AI platforms united with in-memory computing technology will have the capacity to offer accelerated drug development and discovery and delivery and also help scientists find new uses for drugs

Robot assisted surgery

Robotic surgery, computer-assisted surgery, and also robotically-assisted surgery are terms for technological improvements that utilizes the robotic systems to assistance in surgical procedures. The most familiar surgical robot is the da Vinci Surgical System . Recently, Google has reported that it commenced working with the pharmaceutical giant Johnson& Johnson in designing a new surgical robot system. Robotically-assisted surgery was created to beat the limitations of advance minimally-invasive surgical procedures and to improve the capacity of surgeons performing open surgery. In the case of robotically-assisted minimally-invasive surgery, instead of straightly moving the instruments, the surgeon uses one of two methods to control the instruments; either a direct telemanipulator or through computer control. . One beneficial use of the the computerized technique is that the surgeon does not need to be available during the surgery, but rather can be anywhere in the world, top to the likelihood for remote surgery. They are not the only revivals, though. With their AXSIS robot, Cambridge advisers aspire to conquer the limitations of the da Vinci, such as its big size and inability to work with extremely detailed and delicate tissues. Their robot somewhat relies on flexible components and small, worm-like arms. The programmer consider it can be applied later in ophthalmology, e.g. in cataract surgery. A telemanipulator is a remote controller that allows the surgeon to execute the ordinary activities related with the surgery in the meantime the robotic arms complete those movements using end-effectors and manipulators to do the real surgery on the patient. In computer-controlled systems the surgeon utilizes a computer to deal with the robotic arms and its end-effectors, however these systems still utilize telemanipulators for their information.

Recognition of facial feature

Our face, similar to our fingerprints, is a biometric identifier, a very unique characteristics are extracted

(minutiae), for face identification, and the similar process is used. These applications draw data points from a image and evaluate it to images of patients from a database, who have also been treated with these disorders. Utilizing facial recognition is conceivable to perceive a person from a digital photo or a video. This is reached by detecting a face in the image or video and comparing it with a database including both face pictures and metadata relating the picture with a person. To demonstrate, consider Face2Gene composition purposes that use face detection and machine learning to assist healthcare providers in recognizing uncommon genetic disorders. Technology that permits AI systems to identify faces in digital photographs is now presenting the similar potential in discovering physical identifiers in some medical conditions. Facial emotion recognition (FER) is a most important area in the fields of computer vision and artificial intelligence owing to its remarkable educational and commercial potential. even though FER can be carried out utilizing multiple sensors.

Treatment of diabetes

Diabetes is known as chronic progressing metabolic turmoil described by high blood glucose level. Increment in blood glucose level is distinguished due to either pulverization of pancreatic β -(Type I) or cells resistant to insulin (Type II). The computer assisted diagnosis, decision support systems, specialist systems and execution of software may help physicians to reduce the intra and inter-observer variability. The application of AI enhances interpretation of outcomes with high precision and maximum speed .The disease development directs to severe micro vascular or macro vascular disorders such as neuropathy, nephropathy, retinopathy and cardiomyopathy . The reason for AI in analysis or checking of diabetes and its inconvenience can build up the patient's magnificence of life. . For an instance, The Diabeter Clinic's latest observational test applied a system built on top of a self-optimizing AI platform.

The system, named as Rhythm, forecasts and manages blood glucose levels of people with diabetes, relied only on non-invasive biometric sensors and AI.

IV. Future of Artificial Intelligence in healthcare

As AI technologies expand, they will change the way doctors look at their patients, expand the possibilities to predict and treat diseases, save healthcare expenses and progress medical care in regions where access to healthcare is limited. IN future AI will give doctors prediction with help of real time data.AI has huge and positive impact on doctors and patient in heathcare .AI has ability to collect ad analyse a huge amount of various data.AI also causes risks for the medical profession and patients. Until the data warehouse gets big e large and extremely well trained, doctors will have to continue to use their training and experience to guarantee that artificial intelligence is yielding the proper diagnoses and course of medical treatment. As AI technologies enlarge, they will change the way doctors look at their patients, expand the possibilities to predict and treat diseases, save healthcare expenses and progress medical care in regions where access to healthcare is limited. Finally, picturing a future of medicine based on data and analytics gives clarification for hope but needs constant research to understand its full potential.

V. CONCLUSION

AI can play an important role in helping the doctors and patients to deliver healthcare much more professionally in the 21st century. AI is a branch of computer science and technology adapting with the simulation of smart behaviour in computer system. AI system extracts useful information from large patient population.AI has huge developing market in the field of healthcare. It has applications in this field such as drug discovery, diabetic management, data management, digital consultation etc. There is some proven evidence that medical AI can play an

important role in helping the doctors and patients to deliver healthcare.

machine. Artificial Intelligence 1997;97:245-271

VI. ACKNOWLEDGEMENT

Behind every successful work, there are efforts of many people, directly or in-directly. I take this opportunity to thank all those who helped me during this endeavor. First of all, I would like to express my sincere, profound sense of gratitude towards my guide, prof. V.M.Sultanpure who was always there with me to show me the way whenever I was in need. I am privileged by being associated with her. her constant support and inspiration gave me the initial thrust required to excel further. I am thankful to MS J. J..Kadadi, Director of Sangameshwar College, solapur for her zealous and encouraging attitude. I am thankful to Prof. N. B. Kodam, HOD of Computer Science Department for their all-round support . I devote this work to my family who are behind success of this work. Without their support, this work would have been impossible.

Cite this article as :

Pratiksha V. Patil, Shreya S. Dadpe, Prof. V. M. Sultanpure, "Health Analysis in Artificial Intelligence", International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET), Online ISSN : 2394-4099, Print ISSN : 2395-1990, Volume 8 Issue 2, pp. 418-423, March-April 2021. Available at
doi : <https://doi.org/10.32628/IJSRSET1218295>
Journal URL : <https://ijsrset.com/IJSRSET1218295>

VII. REFERENCES

- [1]. A. K. Jain, Handbook of Biometrics. New York, USA: Springer, 2007.
- [2]. Narula A, Narula NK, Khanna S, Narula R, Narula J, Narula A. Future Prospects of Artificial Intelligence in Robotics Software , A healthcare Perspective. International Journal of Applied Engineering 2014;9:10271-80
- [3]. Coiera E. Communication Systems in Healthcare. The Clinical Biochemist Review 2006;27:89-98
- [4]. Sensmeier J. Harnessing the Power of Artificial Intelligence. Nursing Management 2017;48:14-19.
- [5]. C. I. F. N. I. F. B. Digital healthcare s. l. gpbullhound. 2013;91643080.
- [6]. Bluma AL, Langley P. Artificial Intelligence Selection of relevant features and examples in