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Artificial Intelligence in Healthcare

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ABSTRACT

Artificial intelligence is to reduce human cognitive functions. It is bringing an approach to healthcare, powdered by increasing the availability of healthcare data and rapid progress of analyst techniques. We can survey the current status of Artificial intelligence applications in healthcare and discuss its future uses. It is the most transformative technology of the 21th century. Healthcare has been identified as an early candidate to be revolutized by artificial intelligence technologies. This article aims for providing an early stage contribution with the decision making capacities of artificial intelligence technologies. The possible ethical and legally complex backdrop of the existing framework. I will conclude the present structures are largely fit to deal with the challenge of artificial intelligence are present will discuss clearly about the artificial intelligence contribution to the present health care. Artificial intelligence, machine learning, deep learning can assist with proactive patient care, reduced future risk and streamlined work processes.

Keywords: Artificial intelligence, machine learning, clinical decision support.

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INTRODUCTION:

Artificial intelligence technology is different from other traditional technologies in health care is the ability to gain the information, processes it and gives the well-defined output to the end users[1]. Artificial intelligence does this through machine learning algorithms. Artificial intelligence in health care is used to solve complex algorithms and software to estimate human cognition in the analysis of complicated medicine data. Artificial intelligence is the ability for computer algorithms to approximate conclusions without direct human input. Algorithms can recognize patterns in behaviour and creates its own logic.

To reduce the errors in artificial intelligence output should be tested repeatedly. Artificial intelligence algorithms behave differently from human's behaviour, algorithms are literal if you set a goal they can't adjust itself and they can only understand what has been told exactly. It is impossible to read about the future of healthcare without knowing about it completely. Artificial intelligence research has been started in the year 1956, it has made precious few contributions to medical practise. The hype of machine learning begun to merge with realty[2].

Artificial intelligence lends itself to healthcare delivery well. In recent years there has been an exponential increase in the use of artificial intelligence in clinical environment. Modern medicine facing a significant challenge of acquiring, analysing and applying structured and unstructured data treat or manage diseases, artificial intelligence systems with their data-mining and pattern recognition capabilities come in handy. Medically artificial intelligence is helpful for prediction, diagnosis and treatment or management of diseases[3]. Medical artificial intelligence applications utilise symbolic models of disease and analyse their relationship to patient signs and symptoms. Diagnostic artificial intelligence applications gather and synthesize clinical data and compare information with predefined categories diseases to help with diagnosis and treatment. But also treatment protocol development, drug development and patient monitoring [4].

TYPES OF ARTIFICIAL INTELLIGENCE

Artificial intelligence, machine learning, and deep learning enables health care organisation to analyse an immense volume and variety of data. They progressively deeper insights which lead to proactive care, reduced future risk and streamlined work processes. Artificial intelligence, machine learning, deep learning refer to distinct aspects of

intelligence. Artificial intelligence is a bread concept that houses machine learning but includes other applications, while deep learning is a subset of machine learning. It is important to understand the relationship between the technologies[5].

ARTIFICIAL INTELLIGENCE:

Artificial intelligence technologies enable computers to sense, comprehend, act and learn in a manner more analogous to humans. Artificial intelligence is the overarching term for multiple technologies which allow machines to independently solve problems solve problems they have not been programmed to address.

MACHINE LEARNING:

Machine learning is a subset that uses algorithm models to achieve the concepts of artificial intelligence, as the algorithms are exposed to new data, they independently adapt overtime and modify themselves to perform better in the future. The machines are literally learning as they process information. The process enables artificial intelligence algorithms to choose activities with the highest likelihood of success. Source of the data for machine learning include but are not limited to medical claims and biometric readings.

DEEP LEARNING:

This uses multiple layers of network, including abstract layers not designed by human engineers, to discover patterns in the data. This technique helps to give structure to unstructured data and enables machines to learn to classify data without assistance.

Robotics in surgical procedures becomes more common in spine surgery, there has been a growing body of literature on the technology accuracy, reduction of intraoperative radiation and surgical efficiency. A study shows that 379 orthopedic patients showed that mazor robotics artificial intelligence assisted robotic technology reduced surgical complications fivefold compared to free hand surgeons. Oxford completed the first successful trial of robot assisted retinal surgery. Twelve patients that required dissection of the retina were randomly assigned to either undergo robot assisted or manual surgery under general anesthesia. The artificial intelligence assisted surgery took longer surgical outcomes were equally successful in the robotic and manual surgery group. Artificial intelligence market continues to evolve and best practices are established, there are challenges and unique considerations for the successful technology adoption. They must consider patient privacy and security. Long term investments in the intelligence technologies tend to outweigh the costs of investment to build, maintain, and repair emerging technologies. By accepting the future of intelligence, organisations can profit from many benefits, including fast and accurate diagnostics, reduction in human errors and lowered administrative costs.

HISTORY OF ARTIFICIAL INTELLIGENCE:

The first problem solving program produced in the 1960s and 1970s known as dentrals, while it was designed for applications in organic chemistry. The 1980s and 1990s brought the proliferation of microcomputer and new levels of network connectivity. During this time, there was recognition by researchers and developers that artificial intelligence systems in health care must be designed to accommodate the absence of artificial neural network, that have been applied to intelligent computing systems in healthcare. Medical and technological advancements occuring this half century period that have enabled the

growth health care related applications of artificial intelligence. It can be possible by doing improvements in computing power, increased volume and availability of health related data, genomic growth, implementation of electronic health record system, natural language processing, robot-assisted surgery [8].

Various specialities of current research in medicine have shown an increase in research regarding artificial intelligence.

One of artificial intelligence's biggest potential is to help people stay healthy so they don't need a doctor, at least not as often. The use of artificial intelligence and the internet of medical things is consumer health applications is already helping people. Technological applications encourage healthier behaviour in individuals and help with the proactive management of a healthy lifestyle. It puts consumers in control of health[7].

Artificial intelligence is used to detect diseases, such as cancers, more accurately and in their early stages. According to the amaerican Cancer Society, a high proportion of mammograms yield false results, leading to errors. The use of artificial intelligence is enabling review and translation of mammograms 30 times faster with more accuracy[6].

The especially that has gained the greatest attention is the field of radiology. An ability to interpret imaging results may aid clinicians in detecting a minute change in an image that clinicians might accidentally miss.

Microsoft's hanover project, in partnership with Oregon health and science universities knight cancer institute, analizes medical research to predict the most effective cancer drug treatment option for patients. Other projects include medical image analysis of tumor progression and the development of programmable cells. Google deepmind platform is being used by the UK National Health Service to detect certain health risks through data collected via a mobile app. A second project with the NHS involves analysis of medical image collected from NHS patients to develop computer vision algorithms to detect cancerous tissues. Intels venture capital arm intel capital recently invested in startup lumiata which uses artificial intelligence to identify risk patients and develop care options.

Artificial intelligence enables any digital device to see and recognise objects, understand, and reply to recognisable messages, make decisions, and even learn to change its thinking and behaviour as it analyzes of data points in the distributed memory known as the cloud.

CONCLUSION:

Artificial intelligence technology is well on its way to becomes appearing and has huge scope enhance technology at many levels, leading to much better, faster patient outcomes. Health organisations must quickly adapt to evolving technologies, regulation, and consumer demands. Artificial intelligence, machine learning, deep learning can assist with proactive patient care, reduced future risk and streamlined work processes. It is also helpful in robot assisted surgery, diagnosing diseases like cancer at its earlier stages. It is possible to outsource data storage, leverage advanced theoretical understanding of data, and take advantage of computers that can execute complex tasks at high speeds and low costs. It is used as virtual nursing assistant, clinical judgment or diagnosis, image analysis, workflow and administrative tasks.

REFERENCES:

1. Artificial intelligence in healthcare: past, present and future

    https://svn.bmj.com/content/2/4/230

2. Artificial intelligence in healthcare

    https://en.wikipedia.org/wiki/Artificial_intelligence_in_healthcare

3. Role of artificial intelligence in healthcare in the future

    http://rx4group.com/what-role-is-artificial-intelligence-likely-to-play-in-healthcare-in-the-future/

4. Use of Artificial intelligence in healthcare delivery, Sandeep reddy, page 8/19

5. Artificial intelligence in healthcare, eHealth initiatives, November 2018, 2 of 7

6. No longer science fiction, AI and robotics are transforming health care

    https://www.pwc.com/gx/en/industries/healthcare/publications/ai-robotics-new-health/transforming-healthcare.html

7. Artificial intelligence (AI) in healthcare and biomedical research: Why a strong computational/AI bioethics framework is required?

    https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6324122/

8. Char DS, Shah NH, Magnus D. Implementing machine learning in health care – addressing ethical challenges. *N Engl J Med* 2018; 378:981–3.