



Artificial Intelligence in Healthcare Industry

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ABSTRACT

Artificial intelligence (AI) is a powerful and disruptive area of computer science, with the potential to fundamentally transform the practice of medicine and the delivery of healthcare. In this review article, we outline recent breakthroughs in the application of AI in healthcare, describe a roadmap to building effective, reliable and safe AI systems, and discuss the possible future direction of AI augmented healthcare systems. AI can be applied to various types of healthcare data (structured and unstructured). Popular AI techniques include machine learning methods for structured data, such as the classical support vector machine and neural network, and the modern deep learning, as well as natural language processing for unstructured data.

Keywords: Artificial intelligence, clinical decision support, healthcare data ; deep learning; medicine; AI systems.

INTRODUCTION

- i. The rate of innovation in AI technologies is faster than the evolution in standards of care and training. This dynamic has implications for technology adoption decisions, integration within clinical workflows, clinician and patient acceptance, perceptions of quality and equity in the consult experience (e.g. when substituting a human for an AI chatbot) and the legal liability exposure of clinicians or caregivers.

The emergence of artificial intelligence (AI) in healthcare has been groundbreaking, reshaping the way we diagnose, treat and monitor patients. Artificial intelligence in healthcare is an overarching term used to describe the use of machine-learning algorithms and software, or [artificial intelligence \(AI\)](#), to mimic human cognition in the analysis, presentation, and comprehension of complex medical and health care data. Specifically, AI is the ability of computer algorithms to approximate conclusions based solely on input data.

Cognitive skills:

Cognitive computing (CC) is a general perspective presenting AI as computing capabilities that: can be applied to augment/amplify human cognition, scales well, and replicates human expertise in cognitive-task performance. Cognitive computing includes AI technologies such as machine learning, natural language understanding, speech and image recognition, conversant human interface, distributed and high-performance computing Artificial Intelligence and its tools in healthcare is that it automates redundant, time-consuming tasks. This leads administrators to have some spare time and go on working with other important and necessary tasks. Olive is an AI-based platform that automates several processes such as checking the eligibility of un-adjudicated medical claims, transferring the necessary medical data to the respective medical professionals, and so on. Olive integrates with the existing tools and software of a hospital easily, eradicating the requirement for expensive downtimes and integrations. AI or machine learning is anticipated for the healthcare industry in the following years. This is relied upon to bring down clinical treatment costs by almost half, says market research and analysis firm, Frost and Sullivan. Present day technologies permit doctors to more readily comprehend what tests are to be done to better comprehend the patient's medical problem, analyze further issues and diseases assuming any, find appropriate solutions and give the best care.

APPLICATIONS OF AI IN HEALTHCARE AND MEDICINE

AI has the potential to be used in planning and resource allocation in health and social care services. For example, the IBM Watson Care Manager system is being piloted by Harrow Council with the aim of improving cost efficiency. It matches individuals with a care provider that meets their needs, within their allocated care budget. It also designs individual care plans, and claims to offer insights for more effective use of care management resources. AI is also being used with the aim of improving patient experience. Alder Hey Children's Hospital in Liverpool is working with IBM Watson to create a 'cognitive hospital', which will include an app to facilitate interactions with patients.

Electronic Health Records- Electronic health records are crucial in healthcare, as they help analyze the data from the very past to present and which in turn helps improve different types of treatment and drug usage to a disease.

Screening for neurological conditions – AI tools are being developed that analyse speech patterns to predict psychotic episodes and identify and monitor symptoms of neurological conditions such as Parkinson's disease

Radiology- Ai is being used in the field of radiology, and through using CT scans MR imaging X-ray the diseases are diagnosed in the patients.

Echocardiography – the Ultromics system, trialled at John Radcliffe Hospital in Oxford, uses AI to analyse echocardiography scans that detect patterns of heartbeats and diagnose coronary heart disease.

REVIEW OF LITERATURE:

A systematic review is a means of identifying, evaluating and interpreting all available research relevant to a particular research question, topic, or phenomenon of interest. In addition, it is defined as a methodology that summarizes the process of collecting, arranging, and assessing literature in a review domain. AI continues to outperform humans in terms of accuracy, efficiency and timely execution of medical and related administrative processes and these developments may have significant impact on future direction of not only the healthcare sector but for humanity. In terms of patients, the benefits are related to clinical safety, patient experience and holistic care provision that can be studied from a clinical or psychological perspective.

OBJECTIVES:

Artificial intelligence in healthcare is an overarching term used to describe the use of machine-learning algorithms and software, or artificial intelligence (AI), to mimic human cognition in the analysis, presentation, and comprehension of complex medical and health care data. AI systems perceive environments, recognize objects, contribute to decision making, solve complex problems, learn from past experiences, and imitate patterns. Healthcare holds great promise, this rapidly developing field also raises concerns for patients, healthcare systems and society; these concerns include issues of clinical safety, equitable access, privacy and security, appropriate use and users, as well as liability and regulation. The traditional goals of AI research include reasoning, knowledge representation, planning, learning, natural language processing, perception, and the ability to move and manipulate objects. General intelligence (the ability to solve an arbitrary problem) is among the field's long-term goals.

METHODOLOGY

AI can be used to help detect diseases faster, provide personalized treatment plans and even automate certain processes such as drug discovery or diagnostics. It also holds promise for improving patient outcomes, increasing safety and reducing costs associated with healthcare delivery.

RESULTS:

In the future, it is likely that AI systems will become more advanced and attain the ability to carry out a wider range of tasks without human control or input. If this comes about, some have suggested that AI systems will need to learn to 'be ethical' and to make ethical decisions.⁷⁵ The challenges of AI in the healthcare sector are related to the real and perceived data integrity matters and the resultant patient safety and privacy issues. Healthcare is complex, and all patient circumstances and scenarios may have a multitude of environmental and situational factors that are either not recorded in the digital format or too complex to be coded in healthcare data systems. AI-driven tools and apps benefit providers from radiology to identifying tumors. [Artificial Intelligence applications in healthcare](#) find new ways to develop new drugs. It was one of the significant benefits of AI in the healthcare industry.

CONCLUSIONS

AI technologies, including machine learning, IoT, algorithms, and robots, are utilized to monitor, diagnose, treat and measure risks and benefits, particularly in the healthcare industry. To enhance procedures and facilitate the administration of medicine, healthcare organizations rely heavily on medical data and analytics. This systematic review includes a discussion of the benefits, challenges, methodologies, and functionalities directly related to AI in the healthcare sector. The findings of this review show that AI and its subareas provide benefits to individuals, organizations and health sectors. There are some challenges, such as data integration, privacy issues, legal issues and patient safety.

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REFERENCES

1) A Deep-Learning-based smart healthcare system for patient's discomfort detection at the edge of Internet of Things. IEEE Internet of Things Journal, 8 (2021), pp. 10318-10326.

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- 2) Toward an optimal use of artificial intelligence techniques within a clinical decision support system. Science and Information Conference, pp. 548-554
 - 3) Berwick DM, Nolan TW, Whittington J. The Triple Aim: Care, health, and cost. Health Affairs 2008;27:759–69.