



Artificial Intelligence in Healthcare

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ABSTRACT

Artificial intelligence (AI) will be used more and more in the healthcare industry as a result of the complexity and growth of data in the sector. Payers, care providers, and life sciences organisations currently use a variety of AI technologies. Researchers and healthcare professionals are paying attention to artificial intelligence (AI) in the healthcare industry. Few prior research, including those in accounting, business and management, decision sciences, and the health professions, have examined this subject from a multidisciplinary angle.

Keywords: Artificial intelligence, clinical decision support, cloud computing; deep learning; machine learning; medical software

Introduction

The primary aim of health-related AI applications is to analyze relationships between clinical techniques and patient outcomes.[1] AI programs are applied to practices such as diagnostics, treatment protocol development, drug development, personalized medicine, and patient monitoring and care. What differentiates AI technology from traditional technologies in healthcare is the ability to gather data, process it, and produce a well-defined output to the end-user. AI does this through AI in healthcare is relatively new, research is ongoing into its application in various fields of medicine and industry. Additionally, greater consideration is being given to the unprecedented ethical concerns related to its practice such as data privacy, automation of jobs, and representation biases.[Artificial intelligence (AI) and related technologies are increasingly prevalent in business and society, and are beginning to be applied to healthcare. These technologies have the potential to transform many aspects of patient care, as well as administrative processes within provider, payer and pharmaceutical organisations.

Cognitive skills:

Medical science has, over centuries, established a deliberate and lengthy process of generating theory based on incremental and isolated (episodic) points of discovery. The cycle time in the health and life sciences, which is the period between discovery and practice based on accepted theory, is a critical factor in our society [1]. This cycle time for medical discovery to practice has been decreasing at a significant pace [2]. Sciences rely on theory development based on hypothetico-deductive modeling, which involves the process of establishing a priori hypotheses and testing for acceptance or rejection using statistical analysis. As a result of the explosion of data available, many research disciplines previously based on the process of a priori theory development are undergoing a radical transformation, moving from an a priori model to a data-driven posterior model. Jim Grey's Fourth Paradigm [2], or word, xvii] refers to this phenomenon of computationally-based research as eScience. eScience, per Grey, is a method of data exploration that unifies theory, experiment, and simulation. The Fourth Paradigm shift suggests a new era of research that is based on massive scales of ubiquitous/abundant data that are computationally processed and stored prior to human intervention. eScience as a methodology of scientific discovery in health and life sciences may be tremendously disruptive to the status quo and result in significant benefits to society.

Benefits of using artificial Intelligence in Healthcare Industry

The healthcare industry is constantly pressured to lower costs while still providing high-quality care. One way healthcare providers meet this challenge is by using artificial intelligence (AI). AI can help to automate routine tasks, freeing up staff time for more critical ones.

AI can help healthcare providers more efficiently diagnose and treat patients. For example, hospitals can use AI to screen X-rays for signs of disease. This can help to reduce the number of unnecessary tests and procedures, which in turn lowers the overall cost to healthcare providers. In addition, AI can create personalized treatment plans for patients. This ensures that each patient receives the most effective care possible, leading to better health outcomes and lower costs.

Artificial Intelligence to Assist in Surgery

From providing guidance to surgeons during procedures to automating the process of mapping out a patient's anatomy, artificial intelligence has many advantages in healthcare and surgery. In fact, a growing number of studies have shown that AI can play a valuable role in assisting surgeons during procedures.

For example, AI can create detailed 3D models of a patient's anatomy, which can help surgeons plan the best approach for each case. In addition, AI-assisted surgery has been shown to reduce surgical times and complication rates. AI can also help to improve the accuracy of surgical procedures while simultaneously reducing the time it takes to complete them.

REVIEW OF LITERATURE:

The goal of this research is to offer an overview of artificial intelligence's role in healthcare. In this field, artificial intelligence has played a crucial influence. A paradigm change in healthcare has occurred due to the increasing availability of healthcare data and the rapid progress of analytics technology. Machine learning technologies such as the support vector machine, deep learning neural networks, and natural language processing manage structured data. Unstructured data is processed using natural language processing.

Review contains the current status of AI applications in healthcare. AI can also be used to automatically spot problems and threats to patient safety, such as patterns of sub-optimal care or outbreaks of hospital-acquired illness with high accuracy and speed. A few ongoing researches of AI applications in healthcare that provide a view of a future where healthcare delivery is more unified, human experiences. This review will also explore how AI and machine learning can save lives by helping individual patients.

OBJECTIVES:

The integration of these components in a consistent, working and observable system builds upon the particular design of the interfaces between the cognitive components: the information streams use high-level semantics, represented as first-order logic statements. In that sense, our deliberative architecture is similar to projects like *cram* or *PEIS Ecology*. *ost* are primarily concerned with the modelling of human cognition and are less focused on the effective deployment on socially interactive robots. In that sense, our contribution in terms of architecture is a practical one: our integration model AI hastaken the responsibility of many tasks for the doctors. This has resulted in more efficient treatment, which is also less time-consuming. AI can provide the test results of MRI, CT Scans, ultrasound, etc, which reduces the time taken to conduct the test and gives out the result quickly. This saves the patients from waiting for weeks to get a test result as they can get it within hours.

METHODOLOGY

Recently AI techniques have sent vast waves across healthcare, even fuelling an active discussion of whether AI doctors will eventually replace human physicians in the future. We believe that human physicians will not be replaced by machines in the foreseeable future, but AI can definitely assist physicians to make better clinical decisions or even replace human judgement in certain functional areas of healthcare (eg, radiology). The increasing availability of healthcare data and rapid development of big data analytic methods has made possible the recent successful applications of AI in healthcare.

RESULTS:

The healthcare industry is adopting impactful technologies for improving patient care. Artificial intelligence (AI) in medicine and healthcare is a hot topic for the past few years. It is becoming a revolutionary technology in healthcare in this digital era.

AI in healthcare takes over all routine tasks of physicians, administrators, and even patients. AI-powered tools reduce the cost of service and offer high-level treatments in very less time. This was the core pillar for the increased deployment of AI in healthcare.

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 can undoubtedly bring new efficiencies and quality to healthcare outcomes in India. However, gaps and challenges in the healthcare sector reflect deep-rooted issues around inadequate funding, weak regulation, insufficient healthcare infrastructure, and deeply embedded socio-cultural practices. These cannot be addressed by AI solutions alone.

The effectiveness of these systems will depend on accurate identification of problems and their matching to appropriate solutions. Currently, there is a risk that solutions are technology-led rather than problem-led, and they are as a result often blind to specific contextual needs or constraints. For example, it might not be the best approach to design real-time or synchronous solutions for digital products meant to be used in remote areas where basic internet infrastructure is lacking. Designing the right digital interventions is often challenging because of the digital divide between the user and the technology developers, who are typically more adept at using technology than the user is. Finally, issues around privacy, misuse and accountability are only slowly being understood, and require much more far-reaching consideration before AI can deliver safe and fair healthcare solutions..

FUTURE WORK

This research could be expanded into a larger study involving significantly more participants and organizations, helping to determine additional opportunities or threats artificial intelligence would pose to those organizations and their business processes. Artificial intelligence(AI) is transforming

the way we interact, consume information, and obtain goods and services across industries. In health care, AI is already changing the patient experience, how clinicians practice medicine, and how the pharmaceutical industry operates.

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