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AI in Healthcare and its Future

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ABSTRACT

Artificial intelligence (AI) in healthcare can improve patient care, enhance quality of life, lead to better discoveries in research, and explore new solutions to diseases. Artificial intelligence (AI) in healthcare can improve patient care, enhance quality of life, and lead to better discoveries in research, and explore new solutions to diseases. Today, our lifestyles, the global demographics, and our needs as individuals are rapidly changing and more people need healthcare than ever before. Healthcare costs are also becoming increasingly expensive and with increased demands and the technological developments, major changes in the healthcare value chain and business models are on their way to disrupt the healthcare system as we know it. The health insurance industry is facing many challenges such as privacy, increasing competition, rising costs, and an aging population. Artificial intelligence (AI) is increasingly being used to do risk assessments, determine premiums, prevent fraud, accelerate claims, prevent illnesses, and improve customer experience.

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Introduction

Artificial Intelligence is transforming the society and our life greatly, In coming future it will not be hugely impacting our life. In US we are seeing shortage of healthcare worker and AI/ML could give answer to that. It takes lot of time to train people and it is very costly process also with AI healthcare cost can come down, since more then 70% people in US are in any kind of medicate and it is difficult to get appointment of provider. The average US household income is less then 60,000 USD and to government it cost in Medicare and Medicaid plan. With AI evaluation in healthcare government cost will decrease and people expenditure in healthcare and will contribute to US economy. AI could significantly reduce inefficiency in healthcare, improve patient flow and experience, and enhance caregiver experience and patient safety through the care pathway.

Evolution of Technology

There have been a great number of technological advances within the field of AI and data science in the past decade. Although research in AI for various applications has been ongoing for several decades, the current wave of AI hype is different from the previous ones. A perfect combination of increased computer processing speed, larger data collection data libraries, and a large AI talent pool has enabled rapid development of AI tools and technology, also within healthcare [1]. It is generally believed that AI tools will facilitate and enhance human work and not replace the work of physicians and other healthcare staff as such. AI is ready to support healthcare personnel with a variety of tasks from administrative workflow to clinical documentation and patient outreach as well as specialized support such as in image analysis, medical device automation, and patient monitoring [2]. During Barack Obama's presidency, the US Government's reports on AI emphasized, among other things, the applications of AI for the public good as well as aspects of fairness, safety, and governance [3].

Use Artificial intelligence (AI) Healthcare

Diagnosis: AI analyzes medical imaging data to help doctors diagnose patients more quickly and accurately.
Drug Discovery: AI can analyze large data sets to help identify potential drug candidates and predict their effectiveness.
Administrative Tasks: AI can help with administrative tasks like scheduling and billing, which can reduce paperwork and improve efficiency.
Patient Experience: AI assistants and chatbots can help patients find doctors, schedule appointments, and answer questions.
Personalization: AI can analyze patient data to create personalized treatment plans.
Preventive Care: AI can help produce faster results for cancer screenings.
Robotic Surgery: AI-powered robotic surgery systems can perform more precise and less invasive procedures.

Principal of AI Ethics

- Transparency. From hiring processes to driverless cars, AI is integral to human safety and wellbeing.
- Impartiality. Another key principle for AI ethics is impartiality.
- Accountability. Accountability is another important aspect of AI ethics.
- Reliability.
- Security and Privacy.

AI offers several other technical capabilities that can have immediate ethical benefits. The International Risk Governance Center (2018) names AI's analytical prowess, i.e. the ability to analyse quantities and sources of data that humans simply cannot

process. AI can link data, find patterns and yield outcomes across domains and geographic boundaries. AI can be more consistent than humans, quickly adapt to changing inputs and free humans from tedious or repetitive tasks. These are all examples of technical capabilities that can easily be understood as being conducive to human flourishing because they lead to a better understanding and deeper insights into various phenomena. For instance, reducing commuting times or increasing the effectiveness of email spam filters are two everyday examples of where AI can make the life of busy professionals easier.

A primary and frequently cited ethical issue is that of privacy and data protection. Privacy and data protection are not identical, but for the purposes of AI ethics, the key privacy concern is informational privacy, and data protection can be understood as a means to safeguard informational privacy.

Medical Consultation, Empathy and Sympathy

Integrating artificial intelligence (AI) with all areas of health care seems difficult and impossible. Due to uniquely human emotions, human and medical robots might not evolve together in a short time. Physicians and other care providers should seek consultation from or provide consultation to their colleagues, which is not possible in autonomous (robotic) systems. On the other hand, it seems unlikely that patients will accept "machine-human" medical relations instead of "human-human." Doctors and nurses are expected to provide treatment in an empathetic and compassionate environment, which will significantly affect the healing process of patients. This will not be achieved with robotic physicians and nurses. Patients will lose empathy, kindness, and appropriate behavior when dealing with robotic physicians and nurses because these robots do not possess human attributes such as compassion [4].

Safety

Safety is one of the biggest challenges for AI in healthcare. To use one well-publicized example, IBM Watson for Oncology uses AI algorithms to assess information from patients' medical records and help physicians explore cancer treatment options for their patients [5]. However, it has recently come under criticism by reportedly giving "unsafe and incorrect" recommendations for cancer treatments [6,7]. The problem seems to be in the training of Watson for Oncology: instead of using real patient data, the software was only trained with a few "synthetic" cancer cases, meaning they were devised by doctors at the Memorial Sloan Kettering (MSK) Cancer Center. MSK has stated that errors only occurred as part of the system testing and thus no incorrect treatment recommendation has been given to a real patient [7].

AI in Drug Discovery

The drug development industry is bogged down by skyrocketing development costs and research that takes thousands of human hours. Putting each drug through clinical trials costs an estimated average of $1.3 billion, and only 10 percent of those drugs are successfully brought to market. Due to breakthroughs in technology, AI is speeding up this process by helping design drugs, predicting any side effects and identifying ideal candidates for clinical trials.

AI in Patient Experience

AI can be used to support digital communications, offering schedule reminders, tailored health tips and suggested next steps to patients. The ability of AI to aid in health diagnoses also improves the speed and accuracy of patient visits, leading to faster and more personalized care. And efficiently providing a seamless patient experience allows hospitals, clinics and physicians to treat more patients on a daily basis.

AI in Healthcare Data Management

Highly valuable information can sometimes get lost among the forest of trillions of data points. Additionally, the inability to connect important data points slows the development of new drugs, preventative medicine and proper diagnosis. Because of its ability to handle massive volumes of data, AI breaks down data silos and connects in minutes information that used to take years to process. This can reduce the time and costs of healthcare administrative processes, contributing to more efficient daily operations and patient experiences.

Conclusion

AI has the potential to significantly revolutionize healthcare by enabling faster, more accurate diagnoses, personalized treatment plans, proactive disease prediction, improved patient monitoring, and streamlined administrative processes, ultimately leading to better patient outcomes and more efficient healthcare delivery; however, ethical considerations, data privacy, and the need for robust regulatory frameworks must be addressed for successful implementation of AI in healthcare. AI can process vast amounts of medical data to identify patterns and insights that may not be readily apparent to humans, leading to more accurate diagnoses and better treatment decisions.AI algorithms can analyze individual patient data to develop tailored treatment plans, maximizing effectiveness while minimizing side effects.

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