Artificial Intelligence Towards Health Care and Its Role in Diagnostics and Treatment

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ABSTRACT

Artificial intelligence (AI) has rapidly expanded across several industries in recent years, with the healthcare sector emerging as a key area due to its revolutionary potential. This technological innovation has the probable to revolutionize patient care and administrative procedures by leveraging large longitudinal patient data. AI is a powerful and cutting-edge area of computer science that has the potential to change healthcare delivery and medical practice fundamentally. This article explains evolution and application of AI in healthcare, analyzes the possible challenges and benefits AI-augmented healthcare systems, and lays out a future plan for developing successful, reliable, and safe AI systems. AI can support a variety of decision-making processes, including public health surveillance and communication. It can also boost productivity in routine public health duties. Fundamental problems with worker skills, accountability, data protection, equity, and the need for robust digital infrastructures are impeding its widespread adoption.

INTRODUCTION

Artificial intelligence has enormous, extraordinary digital power that is affecting the entire Indian nation. Additionally, it alters the way healthcare workers think about their jobs and boosts their morale by making them feel satisfied with their jobs. In the digital healthcare sector, healthcare departments like pharmacy and laboratory management systems have a lot of chances to market themselves and generate extra cash. It raises people's standard of living and helps to create more job opportunities. Additionally,

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this is an excellent route for the expansion of the Indian economy. Artificial intelligence in healthcare is developing medical diagnosis, treatment outcomes, and decision-making through the use of data analytics, machine learning algorithms, and automation (Bajwa et al., 2021). It could lower expenses, boost productivity, and enhance service quality. AI technology is completely changing the way healthcare is provided, managed, and experienced by patients as it develops and is gradually incorporated into current systems (Bohr et al., 2020). The revolutionary potential of AI in several healthcare domains was demonstrated by Najjar, (2023, pp.2760). AI developed diagnostic systems have remarkable accuracy in diagnosing conditions like cancer, heart and nerve disorders, especially in medical field. They have often outperformed human professionals in conditions of speed and accuracy. Algorithms using artificial intelligence can easily track data, store large amounts of information, control clinical equipment, reduce expenses by more than double, correct information, and generate steady income. Additionally, the electronic health records system helps to introduce AI into the healthcare industry, enhances the method of generating healthcare income, and promptly identifies health issues. To find patterns and forecast patient outcomes, ML algorithms analyze enormous volumes of data from genomes, and medical records. This allows for an earlier and more precise diagnosis. Personal level treatment plans that tackle each patient's particular requirements and increase treatment efficacy are made possible by AI-powered expertise, which also improves patient outcomes (Jayakumar et al., 2023).

AI's capability to handle big data and streamline processes makes healthcare facilities run more efficiently and assign resources where they are most required (Devanport & Kalakota, 2019). AI has ability to drastically lowest healthcare costs by improving diagnosis accuracy, eliminating pointless procedures, and optimizing treatment plans (Jayakumar et al., 2023). One important AI application in healthcare is predictive analytics, which aids in resource allocation, population health management, and patient demand forecasting (Bohr et al., 2020). These characteristics are especially helpful in chronic illnesses meanwhile prior detection and customized treatment may avoid expensive consequences and hospital charges (Bohr et al., 2020). AI is essential to consider ethical issues like protecting patient secrecy and preventing partiality in AI systems. Strong controlling frameworks are also essential to supervise the development and AI application technology in healthcare and assurance that the highest safety and efficacy standards are met (Dwivedi et al., 2023). Cultural change is also necessary for the healthcare sector to embrace AI. AI also improves operational competence by automating procedures like billing, and patient triage and by strategically assigning resources to reduce times and improve workflow in general (Bajwa et al., 2023). Healthcare workers need to be attentive to the benefits and drawbacks of AI technology and prepared to deal with them. To generate systems that are in line with the requirements of patients and providers, cooperation between AI developers, healthcare professionals, and lawmakers is crucial. AI-driven systems use ML procedures to detect patterns and early diagnose signs of disease epidemics, allowing for timely responses (Hosn et al., 2018).

By evaluating symptoms, travel logs, and environmental data, AI techniques predict epidemics and monitor the spread of illnesses such as monkeypox, chikungunya, and COVID-19. This aids public health officials in allocating resources, putting prevention plans into action, and addressing emerging health threats (Alowais et al., 2023). First of all, AI is driving the development of healthcare, not merely a technical breakthrough (Dwivedi et al., 2023). There is optimism for a more customized, efficient, and easily available healthcare system in the coming time because of its ability to revolutionize patient care, diagnostics, and operational effectiveness. Before incorporating AI into the healthcare sector, legal, ethical, and cultural considerations necessity carefully examined as the technology advances. By overwhelming these challenges, AI may fulfill its promise of transforming