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Artificial Intelligence for Healthcare: Issues, Challenges and Opportunities

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Abstract

Background: The healthcare sector has been investing hugely on various technologies for healthcare solutions. Expenditure and jobs are increasing exponentially in healthcare, however, there is a little improvement in healthcare situation, as there are many deficiencies in healthcare workflow, such as mistaken treatment, inefficient use of palliative care resources, inefficiencies in workflow, inequities, and inadequate time and care given to patients [1]. Recently, the healthcare industry has witnessed an exponential rise in healthcare data, which is very heterogeneous compared to other research areas. Amongst the most sophisticated technologies being used in healthcare, Artificial Intelligence (AI) is emerging as one of the most prominent technology that can harness this massive amount of healthcare data to help physicians in various ways. AI can perform better than human physicians in certain key healthcare tasks such as diagnosing different diseases, spotting malignant tumors and making efficient clinical decisions with greater consistency and speed [2].

Objective: This paper presents a comprehensive use of AI, including various deep learning techniques, in various healthcare domains. The main focus would be on recent advancements and applications of AI in medical image analysis.

Methodology: The existing literature related to use of AI in healthcare domain have been reviewed. Further, issues, challenges and opportunities associated with the application of AI in different healthcare domains are presented.

Results and discussion: Various implementation challenges of AI in several healthcare domains have been elicited. It is inferred that AI play a prominent role in medical imaging by assisting physicians in making clinically relevant decisions effectively and efficiently.

Conclusion: AI can analyze high-resolution medical images generated in various healthcare domains such as radiology, ophthalmology, cardiology, dermatology and pathology [3]. Several AI techniques, especially Convolutional Neural Networks, have shown immense potential in traditional computer vision tasks and can be improved to handle 3-Dimensional structure of various imaging modalities in healthcare.

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