

Machine Learning for Healthcare

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Abstract

Background: The healthcare sector is one of the emerging and fast-growing sectors today. But the access to healthcare and services are unequally available to a large section of the society. In earlier times, textbooks and experts were the only medium of gaining knowledge of medical field and practical knowledge was gained while treating patients [1]. The most difficult task was to comprehend such large information. With time and technological advancements, the cost of healthcare and services has decreased. Technology not only provide therapeutic measure; it also helps in analysing data to reveal some useful information and results. Modern technologies and advancements, especially Artificial Intelligence (AI), have immense potential to reveal useful insights, which can help clinicians to arrive at better decisions and provide timely care [2]. AI is helping humans to enhance their life and, in many areas, has surpassed the ability, efficiency and performance of humans. Healthcare is one such area [3]. Machine Learning (ML), a branch of AI, has various applications in healthcare sector like disease diagnosis, treatment, prevention, management of records of patients, drug discovery, digital consultation, robotic surgery etc [4][5].

Objective: The focus would be on the use of ML for prevention, detection, diagnosis and treatment of some major diseases like cancer, heart disease, diabetes and obesity. Further, issues and challenges in healthcare are discussed followed by how ML models can be used to address these by analysing voluminous healthcare data in order to assist the clinicians to take better timely decisions at lower cost.

Methodology: In this paper, existing literature related to use of ML in diagnosis of major diseases like cancer, heart disease, diabetes and obesity have been reviewed.

Results and discussion: ML based healthcare models are evaluated and compared on various performance parameters like accuracy, precision, recall, *f1*-score and AUC-ROC.

Conclusion: The use of ML would not only strengthen the healthcare services but also would boost preventive care and early detection of disease to save many lives [6]. Application of ML to subdomains of healthcare that involve medical-image data related to ophthalmology, cardiology, dermatology, pathology can be explored as future work.

References

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