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Editorial

Advancements in Explainable (XAI) and Expandable Artifial Intelligence (xeAI) in Medicine

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Abstract

Modern medical diagnoses primarily rely on evaluating digital images of sickness. Artificial intelligence (AI) has been effectively applied to medical picture evaluation, allowing reliable assessment to be completed automatically, relieving physicians of some of their effort, lowering diagnostic error, and speeding up illness diagnosis and prognosis. Medical image processing-based artificial intelligence systems are a hot issue for research because they employ cutting-edge computer algorithms for prediction, diagnosis, and treatment planning, significantly impacting decision-making processes. Modern AI approaches such as "Machine Learning (ML)" and "Deep {earning (DL)" are widely used in the healthcare business to help with sickness diagnosis.

Keywords: Diagnostics; Prognosis; Sickness; AI; ML; D

Introduction

Over the last decade, a surge of advancement elevated artificial intelligence (AI) in several sectors [1]. Even while the exact course of AI's progress is complicated and multifaceted [2], it is obvious that several significant connected technological trends, such as the shift to generative AI as the paradigm [3], the models of foundation, the growth of AI [4], and the gradually increasing generalisability and explainability of AI [5]. The medical field is not an exception. AI is fundamental and alters the healthcare industry enabling new and improved approaches to the provision of treatment. It could have a significant impact on the problems facing modern healthcare.

Case studies

Numerous studies have emphasised cutting-edge applications of AI techniques to enhance illness detection and diagnosis. Qu and Xiao, for example, integrate and forecast the O6-methyltransferase promoter for treatment. Bardihi., *et al.* observed that the most recent studies on deep learning improve colorectal polyp identification through different algorithms on several datasets. In addition, Uddin., *et al*. observed a thorough assessment. This research identified those at risk of diabetes effectively, allowing for prompt patient care and intervention [6]. The medical field is not an exception.

Relative scope

For instance, to care for HIV-positive patients during the pandemic. Cingolani., *et al*. developed a cutting-edge platform powered by a machine learning system to anticipate HIV-related alarms to solve these issues. This platform makes it easier to manage patients remotely while considering their actual needs [6].

Disease management

Managing patients with HIV throughout the pandemic posed significant difficulties. To tackle these difficulties, Cingolani., *et al*. developed a cutting-edge eClinical platform that utilises a machine learning system with the ability to forecast HIV-related notifications. This platform enables the remote management of patients, considering the specific needs of individuals living with HIV/AIDS (PLWH) [6].

Outcomes

The World Health Organisation has acknowledged that "colorectal cancer" is the cause of around 881 thousand fatalities, accounting for 9.2% of all "cancer-related deaths" [5]. Nevertheless, a recent European study conducted in 2020 on colorectal cancer indicates that there is a projected decrease in overall cancer mortality rates. Specifically, the mortality rates for colorectal cancer are over-estimated [2-4]. "Adenomatous colon polyps (adenomas) and polyps" > 1 cm carry an increased risk of developing cancer [5]. It involves using a camera to inspect the large and small bowel region [6]. The benefits of this surgery include the ability to visually observe and remove polyps before they increase in size, as well as the option to do a biopsy if there is suspicion of a cancerous polyp [1]. Additionally, at least one polyp was not detected. As previously stated, a polyp that goes unnoticed, whether it is noncancerous or cancerous, can result in delayed detection of colorectal cancer (CRC), which is linked to a survival probability of less than 10% for CRC. Several factors contribute to the failure to detect polyps during a colonoscopy requires a deep study through explainable and expandable AI technologies.

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