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Machine Learning in Healthcare: A Review of Current Applications and Future Trends

ABSTRACT:

Machine learning (ML) has been a main force behind important breakthroughs in patient tracking, personalized medicine, medical tests, and operating efficiency in the healthcare business in recent years. Machine learning algorithms provide unique insights into early disease identification, picture analysis, and prediction analytics, improving diagnosis accuracy and treatment results. These programs are able to examine big and complex information. By predicting treatment effectiveness and genetic risks, machine learning (ML) allows personalized medicine by allowing customized care through tailored therapy approaches. Furthermore, preventative health management is backed by ML-driven prediction analytics and online patient tracking, especially for chronic illnesses. Operationally, machine learning increases process efficiency and cuts costs, allowing for data-driven decision-making and individualized patient care.

However, there are important ethics issues with machine learning acceptance in the healthcare business as well, such as data protection, computer bias, and legal problems. This study offers a full analysis of the state-of-the-art machine learning applications in healthcare, stressing their revolutionary potential while discussing the ethics issues and hurdles that must be addressed to ensure execution that is both responsible and fair.Machine learning (ML) has emerged as a transformative force in healthcare, offering innovative solutions to long-standing challenges in diagnosis, treatment, and patient care. This review explores the current landscape of ML applications across various healthcare domains, including medical imaging, electronic health records (EHR) analysis, predictive analytics, personalized medicine, and drug discovery. It highlights the integration of ML algorithms in enhancing diagnostic accuracy, optimizing treatment plans, and improving clinical decision-making.