

AI-DRIVEN PREDICTIVE MODELING FOR EARLY CANCER DETECTION AND RISK ASSESSMENT"

Abstract

The early detection and accurate prediction of cancer remain crucial for improving patient survival rates and reducing healthcare costs. This study leverages artificial intelligence (AI) and data science to develop predictive models aimed at identifying cancer patterns and assessing patient risk. By utilizing large datasets, including medical imaging, genomic sequences, and electronic health records, the research applies machine learning algorithms, such as deep neural networks and ensemble models, to detect subtle biomarkers and predict cancer incidence. The proposed models will be evaluated on key metrics like accuracy, sensitivity, and specificity, ensuring their clinical relevance. This research not only aims to enhance diagnostic accuracy but also to offer a data-driven approach that supports personalized treatment planning and early intervention. By advancing AI-driven predictive analytics in oncology, this study contributes to the development of more accessible, reliable, and proactive cancer care solutions.