Abstract

When it comes to medical diagnosis and care, artificial intelligence may be a dependable support system for busy medical professionals and institutions, reducing stress and maximizing productivity. AI-aided medical diagnosis improves clinical decision-making, management, automation, administration, and workflows. It can aid in the diagnosis of cancer, the triage of critical findings in medical imaging, the identification of acute abnormalities, the provision of assistance to radiologists in the prioritisation of cases involving life-threatening conditions, the diagnosis of cardiac arrhythmias, the prediction of the outcomes of strokes, and the assistance in the management of chronic diseases. Artificial intelligence (AI) is an ever-expanding, constantly-evolving, and patient-centric ecosystem of data, algorithms, analytics, deep learning, neural networks, and insights. Artificial intelligence in medical diagnostics has showed significant promise in recent years for both improving medical treatment overall and relieving some of the industry's tremendous stresses.

Machine learning-based autonomous detection and diagnosis systems have demonstrated impressive accuracy and speed. In the recent decade, analytical techniques for breast cancer have made significant progress. Many different automatic classification methods have been used in the past few years. Different strategies produce varying results. Problems still need to be solved, such as the need for innovative approaches.

In this study, we proposed several predictive models using various methodologies and soft computing techniques like Support Vector Machines, Deep Neural Networks, Adaptive Neuro Fuzzy Inference Systems and Radial Basis Function Networks and implemented this models on WDBC and WBC data sets. In the construction and implementation of models different optimization strategies and network topologies are used. The comparative analysis of the performance of the classification accuracy obtained by the various researchers in their models with our respective proposed models is carried out. The proposed predictive models attained the greatest classification accuracy in a remarkably short amount of time.