

The research paper *“Enhancing Lung Cancer Screening by Analysing Clinical Symptoms Using Machine Learning”* explores the use of artificial intelligence (AI) to improve early detection of lung cancer, which remains one of the leading causes of global mortality. Traditional diagnostic methods like low-dose computed tomography (LDCT) are effective but expensive and inaccessible in low-resource settings. This study employs structured clinical data and machine learning models to create a cost-effective diagnostic solution. Using the Kaggle “Lung Cancer” dataset, preprocessing techniques such as data imputation, normalization, and outlier removal were applied. Feature selection was performed through Recursive Feature Elimination (RFE) to identify the most significant clinical indicators. Several algorithms, including Random Forest, XGBoost, Convolutional Neural Network (CNN), and Support Vector Machine (SVM), were developed and evaluated. Among them, the Random Forest model achieved the highest accuracy of 99%, outperforming XGBoost (96%), CNN (95%), and SVM (92%). The results demonstrate that machine learning can efficiently distinguish between normal and abnormal lung conditions using limited data. However, real-world deployment requires further validation on larger and more diverse populations to ensure reliability and clinical acceptance. The study concludes that integrating interpretable AI models into healthcare systems can revolutionize early lung cancer screening, making diagnosis faster, more affordable, and accessible across diverse environments.