

ABSTRACT

Lung cancer is the leading cause of cancer-related mortality compared to other cancer types, accounting for 32% of cancer deaths in men and 25% in women. Several factors can contribute to lung cancer, including smoking, exposure to secondhand smoke, age, gender, and exposure to radon, asbestos, and other carcinogenic substances. The objective of this study is to compare the classification results of lung cancer using two imbalance handling techniques: Synthetic Minority Oversampling Technique (SMOTE) and Adaptive Synthetic Sampling Approach (ADASYN), utilizing secondary data obtained from the Kaggle website titled "Lung Cancer". This research employs the Support Vector Machine algorithm optimized using Particle Swarm Optimization. The results show that the SVM-PSO algorithm with the SMOTE method performed better than the ADASYN method, with an accuracy of 93,55%, sensitivity of 96,36%, and specificity of 71,43%.

Keywords: *Lung Cancer, Classification, SMOTE, ADASYN, SVM, PSO.*