**Abstract**

Lung diseases are the one that mostly affects large number of people in the world. A sharp rise in respiratory disease in India due to infection, smoking and air pollution in the country. Respiratory diseases were no longer restricted to the elderly but were now being detected even in younger age groups. The early and correct diagnosis of any pulmonary disease is mandatory for timely treatment and prevent mortality. From a clinical standpoint, medical diagnosis tools and systems are of great importance. The proposed work is aimed at establishing more advanced diagnostic strategy for lung diseases using CT scan images. The three types of lung disease Emphysema, Pneumonia, Bronchitis are considered in this work. A dataset with 126 CT scan images of Emphysema, 120 CT scan images of Pneumonia and 120 CT scan images of Bronchitis are collected from National Biomedical Imaging Archive (NBIA) database. The classification of lung disease using Histogram of Oriented Gradients (HOG) features is carried out using classifiers Naive Bayes (NB), Decision tree (J48), Multilayer Perceptron (MLP) and Support Vector Machine (SVM). The performance of the models is compared for its predictive accuracy and the results are presented.