CHAPTER 6

SCOPE OF FUTURE WORK

In this work, comprehensive analysis of the human respiratory functions is carried out using flow-volume spirometry and based on neural networks. The normal and major abnormalities such as obstructive and restrictive conditions were considered to validate the approaches. This study could be extended to analyze the mechanics of lung functions under varied experimental conditions and disease states.

The new methods can be evolved to improve the accuracy of the prediction of \( \text{FEV}_1 \) to enhance the sensitivity and specificity of classification of lung diseases. This classification could further be improved by optimizing the spirometric data through genetic algorithm and principal component analysis. Also, a mathematical index could be evaluated on the significant parameters obtained from spirometric data to overcome the instrumental errors. This work can be further extended to estimate the lung function parameters like compliance and airway resistance. In addition, other significant respiratory parameters such as FVC, PEF and forced expiratory volume in six seconds can be predicted.

An automated system capable of predicting the conditions of human lung could also be developed based on the integrated approach suggested in this study. Such systems would become more accurate and faster and would be useful to distinguish normal, respiratory restrictions and small airway obstructions.