CHAPTER 6

SUMMARY AND CONCLUSION

This research is done on the phases of voice pathology disorder classification and optimization. Firstly, the preprocessing attempts to allow the voice pathology disorder input from the various input voice signal for Noise Removal and Silence Removal. These were removed by using hybrid Wiener Filter and DWT Filters with the help of Electro Glotto Graph (EGG). The design of the Hybrid Wiener Filter Discrete Wavelet Transforms (HWFDWT) algorithm was formed for voice denoising and pathology voice prediction. In addition to this, the proposed Cat Swarm Optimization and Mel Frequency Cepstrum Coefficients (CSOMFCC) methodology was proposed to extract the best features from the input pathology voice signals.

Meanwhile, the feature selection and extraction process are to reduce the execution time and dimensionality. CSO algorithm is used to produce an optimal solution, and also helps to classify the human voice as male/female and as normal/abnormal. The extracted features are stored in the database and the voice samples are trained and tested accordingly. A comparison analysis shows the Cat Swarm Optimization and Mel Frequency Cepstrum Coefficients (CSOMFCC) method outperforms well than MFCC and LPC analysis in features extraction with an optimal solution. Finally, the proposed technique CSOMFCC has extracted the features in reduced dimensionality and in less time.

The Back Propagation Neural Network (BPNN) is used for optimizing classification of the input voice signal. In the classification stage, the accurate classification and optimization high in classified voice samples as normal or pathology by Automatic Voice Pathological Identification System are achieved. The Identification is done by the Modified Optimized Back Propagation Network Disorder voice Classification (MOBPNDVC). MOBPNDVC established the pathological voices and normal voices of each input are classified randomly, and the corresponding to Classification Output Male Normal voice, Classification Output Female Normal voice, Classification Output Male pathology, and Classification Output Female pathology.

Finally, the ROC curve is plotted for individual pathological concern such as Laryngitis, Diplophonia, Dysphonia, Laryngoceles, Chorditis. Modified Optimized Back Propagation Network Disorder voice Classification (MOBPNDVC) produce the classification likely SVM. The Backpropagation neural network models were recognized and modified as proposed MOBPNDVC for classifying voices with the Accuracy rate of classification of 97.79% in Saarbruecken data set test model and 97.5% in Real-time Dataset of Department of Pathology, Karpagam Faculty of Medical Sciences and Research, Coimbatore. The results and discussions section present investigational and development outcomes gained from the proposed Automatic Voice Pathological classification System.

FUTURE RESEARCH DIRECTIONS

- In the future, this research may be developing the ensemble classification method and enhance the model to discriminate the voice samples according to the disorder types. The other Implementation of an online diagnosing system will employ based on the machine learning classifier.
- This research discusses pathology voices classification on the generalized classification method alone. This result may not be patterned on pathology Lab. In the future, the generalized classification method is practiced in the medical pathology Lab for the better-united result.
- This research may not be used in the robotic domain. In the future, this research may be useful in the automatic classification of disordered voices with the help of machine learning techniques.
- This research uses the minimum number of collected Real-time data set value. In the future, this research will have a chance to classify the real-time streaming input voice data with the help of live pathology detection.
- Finally, the research must work on the particular private computer system alone, instead of this system, in future, this system can be implemented in the handheld computers, mobile phones, and all compact devices.