CHAPTER 5

CONCLUSION AND FUTURE SCOPE

5.1 CONCLUSION

A Computer Aided Decision Support System has been developed and implemented using different types of feature extraction techniques and hybrid MBPN with ACO-PSO for analyzing and classifying Fibroid images.

The Acquired images were preprocessed using Wavelet transform to retain the region of interest to extract the features. Discrete wavelet transform filter provided better output of original image and visual observation of tumors. It is found from the results that Wavelet transform produces good Signal to Noise Ratio outputs and minimum Mean Square Error (MSE) comparable to other methods.

The Region of Interest (ROI) has been identified from the preprocessed output using image intensity profile. Phase based level set technique has been used for segmentation.

The multiple features have been extracted using texture and shape features. The optimal feature sets have been obtained using Multi Objective Genetic Algorithm (MOGA). In this present work, 43 features were estimated and optimal feature set was obtained to develop the decision support system for classification. The study reveals that optimized MBPN and MBPN with ACO-PSO increases the classification efficiency and reduces the training and testing time.
The objective of implementing the CAD system has been achieved using image enhancement, denoising, segmentation, and optimal feature extraction and decision process. The implementation would help the clinical experts in classification and decision making of Fibroid tumor in an early stage. So that the health care will become more reliable and improved.

It is concluded that the soft computing techniques enhance the interpretation for better decision making.

Fibroids are mainly due to eating habits, obesity, aging, family history and ethnic origin they cause significant pain as well as bleeding, above 30% of the women may have fibroids. Most of them do not have symptoms. Medical therapy is used for many women who have symptoms from fibroids and sometimes medical therapy is used prior to surgery to shrink the fibroids. Drugs that shrink fibroids are called gonadotropin-releasing hormones and they usually cause symptoms of menopause. Anti-hormonal agents like mifepristone can slow or stop the growth of fibroids. Some health care providers may use hormonal or over-the-counter medications to control pain and bleeding.

A major basic and translational research program is underway to examine additional biological processes that may lead to the development of fibroids such as hormonal stimulation, molecular and cytogenetic changes, differences in cell regulation and the influence of exposures to environmental agents. This research is helping to determine new alternatives for the treatment of uterine fibroids. Potential long-term consequences of this disorder are also under investigation.
Based on the investigation that uterine fibroids have many features in common with a disorder of pathologic wound healing called keloids. The studies revealed that the connective tissue made by the cells in uterine fibroids is markedly abnormal and this may contribute to fibroid growth.

Based on the discovery that uterine fibroids are largely composed of excessive and abnormally-formed connective tissue, a new study was initiated to test a medication that can reduce such tissue. Women aged 35-50 who have completed childbearing, have symptoms of fibroids, and have at least one fibroid of about 2 inches (>4 centimeters) in size may be candidates for the six-month trial of this investigational medication. The website, www.Clinicaltrials.gov, provides details on this study and other active studies for uterine fibroids.

Surgical treatment continues to provide the most effective relief of fibroid symptoms. Surgical options today include: Myomectomy (removal of just the fibroids), and Hysterectomy (complete removal of the uterus), non-surgical medical technologies include uterine artery embolization and magnetic resonance-guided ultrasound therapy. The patient and her physician should discuss treatment options and decide what is most appropriate.

Most cases of uterine fibroids do not affect fertility. In cases where infertility exists, the woman and her health care provider may seek medical or surgical treatments to improve the likelihood of a successful pregnancy. Future research will support the development of prevention strategies, new drugs targeted at growth inhibition, new devices currently being evaluated, better information on why these cells grow, and more individually tailored out-patient removal/reduction treatments. Quality of life is an important area of research for women experiencing this condition.
5.2 FUTURE SCOPE

This thesis has only explored a small territory in using the neuro fuzzy approach in medical image classification. There are many possible directions for future work, which include the following:

- Design a combining multiple classifiers that use different features such as texture features, fibroid shape and size features, etc in order to get an accurate classification of the normal and abnormal uterine image. A combined feature is more meaningful than the one feature representation alone and can significantly improve the performance. The method can be useful in the diagnostic of diseases if the possibility of a feature is known in the Region of Interest (ROI) of an image, and the images can be classified into category of fibroids.

- The classification of fibroids have been done by using Multilayer Back Propagation Network and Neuro – fuzzy Network. The classification efficiencies of the systems are compared to arrive at conclusion of realizing reliable and proficient CAD systems.

- In addition to 43 features considered in the present work, more features may be evaluated using various other feature extraction techniques to further improve the classification to minimize the training and testing time.

- Various Neural Network models may be incorporated to select the best Neural Network.

- Combined classifier scheme may be implemented for identifying tumor category.

- The impact of different types of scanning systems on features may be examined.