CHAPTER 7 CONCLUSION AND FUTUREWORK

This research work is initiated to Study the computation process to determine the clinical decision support system to determine the level of cancer using data mining techniques association algorithm. The mammographic image is obtained from the laboratory and converted as a data set presented as multi dimensional data representation discussed in the previous chapter. The univariate algorithm is used to cluster the data set in to equal five clusters and identified the non zero elements to which leads to the prediction of density ratio. This density ratio and the obtained values are compared initially. The selection of attribute to preprocess the density determination plays the vital role.

In digital image, the layers are used for separating different elements of the image. In this research, the image is divided into layers and several image properties are applied to the image which gives many color images. Based on these images the density level on digital mammogram is to be identified using layer based approach. In this project used color as well as grayscale images to find the high density pixels and the stage of the cancer. Index based approach is used to determine the percentage level of breast cancer in digital mammogram. Based on the level values the stage of cancer is predicated

The association mining process, the affected non zero pixels and its corresponding sum values are considered to calculate the stage values. The stage levels are determined and explained in the previous chapters. The cluster processes are obtained from the preprocessed mammographic images. The mammographic images are processed using geometrical algorithm and carried out with four different images of same patients which obtained at the same time. According to the adaptation of geometrical preprocessing the approach is
classified into two namely common attribute and multiple attributes. While executing common attributes are processed and the results are compared. The common attribute process, the values are same but the stages are not same for the same patients and differ one with another. It shows the density difference are more while executing common attribute approaches.

The same images are processed with multiple attribute; around 16 attributes are processed out on same image out of 64 different attributes. According to the nature of the fetching position of the image, geometric attributes are selected and the images are preprocessed. In the common attributes, the set of following pair of density and stages are produced:

\[(69.76, 2);(55.75, 2);(51.1, 2);(60.76, 2);(65.78, 2);(64.42, 2);(61.5, 2);(62.27, 2);(51.52, 2);(51.33, 2);(46.64, 1);(62.98, 2);(45.91, 1);(45.62, 1);(45.08, 1);(59.92, 2); (51.12, 2);\] the same image set are produced the set of following pair of density and stages in the multiple attributes such as

\[(52.76, 2);(58.59, 2);(55.22, 2);(53.81, 2);(48.1, 2);(50.92, 2);(51.93, 2);(51.2, 2);(52.43, 2);(57.65, 2);(40.55, 1);(50.89, 2);(54.05, 2);(57.92, 2);(43.3, 1);(50.93, 2).\] The obtained results of the four patients are evaluated common and multiple attribute geometric processed and the non zero elements are identified and common range values are obtained. As per the univariate cluster, similar non zero elements are clustered and the density is computed. The density is used to determine the stages values. While compare the stages, which obtained in the common attributes are differ but the multiple attributes are same.

As per the obtained result of the patients, Amul images are produced \((2, 2, 2, 1)\) for the common attributes and \((2, 2, 2, 2)\) for the multiple attributes. The evaluation of Amutha results produced \((2, 2, 2, 1)\) for the common attributes and \((2, 2, 2, 2)\) for the multiple
attributes. In the Aantony ammal results are (2,2,1,1) for common attributes and (1,1,1,1) for the multiple attributes. For the Anjali mammographic analysis produced the satge of (2,2,2,2) and (2,2,2,2) in the multiple attributes. The results are compared with the medical expert and verified that Amul, Amutha and Anjali affected with level stage 2 and antonyammal affected level is stage 1. The evaluation shows that implementation of mutiple attributes using univarite produced the accurate results .When using the common attributes 75% accuracy is obtained. But in the multiple attributes as presented in the chapter 6 shows that all are stages 2 other than antonyammal .Therefore the pattern is (2, 2, 2, 2) for all other than Antonyammal. For antony the pattern was (1, 1, 1, 1) which confirmed in the result of multiple attributes. As per the research result univariate, multiple attribute geometrical preprocessed approach is appreciated and determined mammographic cancer stages.

This univariate equal interval associate clustering is to determine the multivariate approach for the detection of cancer stages are obtained in a simple equal interval approach. The method is simple and the clustering and density determination process produced accurate result while processing the multiple attributes method. The method is associated with the density and stages determination. The occurrence of non zero value and the level of density is used to identify the stage of breast cancer from the preprocessed geometrical image of the digital values.

This research work approach adopted the digital mammographic images to determine the cancer stages using univariate cluster and the selection of specific geometric preprocess for the determination non zero affected pixels. This work, the selection of attributes are made manually. The further work could be carried out automatically selection of geometric
attributes to determine the cancer stages. The cancer detection is proved with four images but the analysis carried out 1280 data set analysis to confirm the stage therefore more accuracy is obtained with simple method. The computation process is simple and more effective to determine the cancer stage using univariate associate clustering model. The supportive results and obtained cluster images are attached in the appendix.