CHAPTER 5

CONCLUSION

This study demonstrates how Hilbert Huang Transform (HHT), Linear Discriminant Analysis (LDA) and Artificial Neural Network (ANN) are applied in analysing Cardiotocogram (CTG) signal. The feature extraction and classification MATLAB source code development of the CTG signal is one of the main objectives achieved in this study.

The first part conducted in this study is feature extraction to extract the IF of the CTG signal by using HHT. There are two processes involved in HHT which are Empirical Mode Decomposition (EMD) and Hilbert Spectral Analysis (HSA). In HHT, EMD is applied to decompose CTG signal into subcomponents which is called Intrinsic Mode Function (IMF). The decomposition is important to enable the calculation of IF by using HSA which is the second process of HHT. From the experiment it proves that EMD is capable in decomposing a (CTG) signal into a set of IMFs and the IF of the CTG signal is calculated successfully.

The second part conducted in this study is the classification process of the IF. LDA and ANN are used in this process. The IF produced from HHT process has been successfully classified up to 96% and 75% correct classification by using LDA and ANN classifier respectively.
The advantage of using LDA can be verified by its simplicity in computation. It performs better for a non complex data. This is because a complex data will causes redundant of output and might be lead to misclassification.

The contribution of this study can be seen at the MATLAB functions (emd.m, hsa.m, lda.m and ann.m) developed for the CTG signal analysis. The MATLAB functions that have been developed in this study can be used for hardware development in analysing CTG signal. The comparison between LDA and ANN has also give information to other researcher which classifier is better to be used for CTG signal in the future.