ABSTRACT

Heart disease is a cardiovascular disease which is the number one cause of death in the world. Heart disease can occur as early as possible from childhood. However, many heart disease also occurs in parents who experience it. One of the causes of heart disease is an unhealthy lifestyle and food that triggers the emergence of heart disease.

So in this final project will be designed a system that can detect heart abnormalities based on heart sounds using an electronic stethoscope or also known as Phonocardiograph (PCG) using the Heart Rate Variability (HRV) method and using a Support Vector Machine (SVM) as a classification of types of heart disease characteristics, especially arrhythmia. The function of an electronic stethoscope is the same as a stethoscope in general, but in this tool it can record and play back the patient's heart sound and can be further processed by signal processing. HRV method is used to obtain features that can determine parameter limits. And SVM is used as a method that can classify based on the limits of the characteristic parameters so that we can know the classification of the type of heart sound disease. In this simulation, it will be displayed with a software application, namely Matlab.

The result of this final project is a simulation that can detect and classify types of heart disease by collecting a dataset of heart sounds. In testing normal heart sounds and arrhythmias with the HRV method and the SVM algorithm, the accuracy value is calculated. The parameters used in the HRV are SDNN, RMSDD, NN50, and pNN50. From the tests carried out, the highest accuracy on SVM is 76% with the Polynomial kernel.

Keywords*: Heart Disease, Phonocardiogram, HRV, SVM.*