

ABSTRACT

Currently, available clinical diagnostics for heart disease, including acoustic stethoscope, electrocardiogram or echocardiography (ECG) are the most popular tests, where the electrical activity of the heart provides important information for diagnosing disorders such as myocardium, infarction, and arrhythmias. Echocardiography is also not widely available in most hospitals and general medical institutions. One alternative to the use of ECG is Seismocardiography (SCG). Seismocardiography (SCG) is a non-invasive technique for evaluating cardiac activity using an accelerometer.

The accelerometer is placed on the surface of the chest in order to detect the vibrations produced by the movement of the heart muscle. However, the complexity of the SCG signal poses a challenge in SCG research. Since the SCG signal is usually polluted by non-myocardial signals, it is necessary to develop digital signal processing to obtain the heartbeat signal from the SCG signal.

In this final project the author produces a program that can visualize the signal in real-time and data processing to get the bpm (beat per minute) value using a sampling frequency of 25 Hz and 50 Hz using the peak detection method. The bpm (beats per minute) accuracy value obtained from 50 tests at the sampling frequency of 25 Hz reached 64.2% and the bpm (beats per minute) accuracy value obtained from 50 tests at the sampling frequency. 50 Hz reached 58.73%.

Keyword : *Seismocardiography, Electrocardiogram, Accelerometer*