Abstract

Using electronic stethoscope for detecting heartbeat sound, and breath sounds, are the effective way to investigate cardiovascular diseases. On the other side, technology is growing towards mobile and wireless technology. Almost everyone has a smartphone. Smartphone has many platforms. Creating mobile applications also become easier. We also can using HTML5 technology to creating mobile apps. Android is the most widely used type of. This causes us to make a wireless electronic stethoscope based on Android mobile. Android-based Wireless Electronic Stethoscope designed by a simple system, uses sound sensors mounted membrane, then connected with bluetooth modul which will send the heart auscultation voice input data by bluetooth signal to Android platform. On the software side, android will read the voice input then it will translated to beautiful visualization and release the voice output which it can be regulated how much the sound be released. We can change the heart beat sound into BPM data, and heart beat analysis, like normal beat, bradycardia or tachycardia.

Based on system testing and analysis has been done, the following is the conclusion of this thesis, the sound sensor output of the android based wireless electronic stethoscope products is located at an average voltage of 1.5V, Vmin 1.63, and Vmax 1.32V. From the above, results can be classified that signals consisting of systol and diastole. However, the output signal is not stable. It would require a series of signal processing and microcontroller is used for processing analog signals into digital. To filter out the frequency of heart beats which has a frequency from 50Hz - 500Hz, we can use band pass filter, frequency obtained in the band pass filter is in the range of 15.916 Hz - 589.463 Hz. Then we amplified by 31 times using a non-inverting amplifier. The time required for one-time delivery of data on android based wireless electronic stethoscope product is 1,04 ms. Based on the questionnaire that has been given to doctors, an average of the results obtained by the overall feasibility of the Android-based Wireless Electronic Stethoscope product is 70.4%.

Keywords : Systole, Diastole, Auscultation, Bradycardia, Tachycardia.