

ABSTRACT

There are many ways to know the condition of the heart as a vital organ in our body. One of them with Photoplethysmograph (PPG). Photoplethysmograph is a device used to determine changes in blood volume. PPG is also used to determine a person's health condition.

In addition this tool can measure heart rate and can measure blood pressure within a certain time, by measuring the change in volume. In this final project will be built Photoplethysmograph (PPG) based on PC with sound card. Coupled with software that can store data such as personal data, and results of other investigations of patients with heart conditions can manampilkan heart rate in real time.

Photoplethysmography consists of sensor, an amplifier, LPF, limiting voltage, sound card, and the computer as a receiver and data visualization. The sensor consists of a red LED and Photoresistors (LDR) placed on a finger. LED emitted signal is received by the LDR. LDR received signal varies in accordance with changes in blood volume, because the received signal amplitude is very small and contain noise that needs to be strengthened and refined. Then the analog signal will be input into the sound card that was previously graduated with a voltage limiter that does not overload soundcard. In addition, data transmitted by the sound card to your computer. In computer graphics signals will be displayed and will be in store in the database.

After testing, the device has been realized by the digital PPG can work well in displaying graphics PPG signal, clean signal from the noise, it can measure heart rate per minute, and this system is realtime. From the test results to calculate the minutes of heart rate, PPG tested accurately with clinical standards and device comparison with manual calculation error value of 1% - 5.2%.

Keywords: Photoplethysmograph (PPG), soundcard.