

ABSTRACT

In the human body there is a heart that pumps blood throughout the body and produces a pulse. Electrocardiogram (EKG) and pulse oxymetry devices have been made to measure pulse. Technology continues to be developed to make it possible to measure pulse without touching the patient's body. Then developed a method called phase-based motion magnification.

In a previous study a method called Eulerian Motion Magnification was used to measure pulse by taking video from the patient's wrist, then micro-movement in the video was enlarged so that the pulse could be seen, then the detection process was done to calculate the number of pulses per minute in BPM . However, this method has the disadvantage that the results are susceptible to noise after the magnification process and the accuracy decreases in low light conditions. In this final project, phase-based motion magnification method is used to answer the shortcomings of the Eulerian method, with low noise results and better accuracy in low light conditions.

The result of simulation has the best accuracy up to 86.94%, using variable sampling rate 250 Hz, low cut off 30 Hz, high cut off 100 Hz, Alpha 50 Pixel, and sigma 4 pixel.

Keywords : EKG, Pulse Oximetry, Phase-Based Motion Magnification, Lagrangian, Eulerian