QUANTIFYING THE INFLUENCE OF MOVING ARTIFACT ON THE DETERMINATION OF PULSE RATE VARIABILITY (PRV) FROM THE PULSE OXIMETRY (SpO₂) SIGNAL MEASUREMENTS

Name : Sumber
ID.No : 2412201003
Supervisor : Dr. rer.nat.Ir.Aulia M.T. Nasution, M.Sc.

ABSTRACT

Heart Rate Variability Measurement using SpO₂ signal can be used to monitor heart activity each day. SpO₂ electrode is easy to use because its installation on the index finger. Disadvantages of using SpO₂ electrodes placed is the finger movement artifacts. To reduce the influence of movement artifacts used SpO₂ STFT method. STFT method is an appropriate method for the movement of the artifacts at any time and only occurs momentarily when the finger moves. The purpose of this study was to determine the difference between number of Heart rate Variability (HRV) produced heartbeat electrocardiogram by Peak Rate variability (PRV) which produced SpO₂, and its influence on the movement SpO₂ artifacts. This study consists of three main stages. The first stage is the process of data collection and signal electrocardiogram SpO₂ signal on 10 men and 10 women with 2 age group 19 years and above 40 years. The second stage is the analysis of datasets without artifacts and artifacts for a dataset with the current state of motion of rotating fingers, move left and right, as well as the top down. Both of these datasets will then be compared first to recognize the movement artifact identifier. The third stage to get a peak rate of SpO₂ and heart rate signal from the electrocardiogram signal. Correlation coefficient was used to determine the relationship between heart rate derived from the electrocardiogram and SpO₂ and its relation to movement SpO₂ artifacts. In the male group the average value of the index finger movement accuracy PRV before Filtered worth 0.5962. After filtered value rising to 0.8418 against the accuracy of the data control. In the female group the average value of the index finger movement accuracy PRV before Filtered worth 0.682 after filtered value rise to 0.825 against the accuracy of the data control

Keywords: Peak Rate Variability, Artifact Identifier, STFT