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Respiratory rate (RR) based analysis of PPG signal for different physiological conditions (Conference Paper)

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Abstract

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This paper investigates the respiratory rate (RR) for different physiological conditions by implicating photoplethysmographic (PPG) signal. In this paper, we have examined four physiological conditions for instance sitting, standing, laying and jogging. Ten healthy volunteers were recruited and segregated by five males and females each group. The acquisition of PPG signal was done by Easy Pulse analyzer sensor module for one minute sample for each condition considering consolidated state prior to sample extraction, which uses pulse oximetry principle and pass the sensed signal by the optical sensor through a sequential high and low pass filters which latterly produces a conditioned PPG signal at its output. The Arduino processing module was used as an interfacing module between easy pulse analyzer and computing machine. The Kubios HRV tool was implicated for execution and manipulation of the PPG data into a required format. The time and frequency domain parameters were analyzed for PPG signal in different physiological conditions. Ultimately, the reports were created depending upon the analysis. The results defines that the PPG signal as well as RR varies depending upon the physiological conditions. It was also keenly observed that the low and high frequencies which is ingredient of PPG signal also vary accordingly to physiological condition. © 2015 IEEE.

Author keywords

Kubios HRV | optical sensor | physiological conditions | PPG | pulse oximetry | Respiratory Rate | RR

Indexed keywords

Engineering controlled terms: Frequency domain analysis | Low pass filters | Noninvasive medical procedures | Optical sensors | Oximeters | Photoplethysmography | Physiological models | Physiology | Smart sensors

Computing machines | Kubios HRV | Low and high frequencies | Photoplethysmographic signals | Physiological condition | Pulse oximetry | Respiratory rate | Time and frequency domains

Engineering main heading: Signal processing

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