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## **INFORMATION TECHNOLOGY OF PHOTOPLETHYSMOGRAM SIGNALS ANALYSIS**

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**ІНФОРМАЦІЙНА ТЕХНОЛОГІЯ АНАЛІЗУ ФОТОПЛЕТИЗМОГРАФІЧНИХ  
СИГНАЛІВ**

Today monitoring systems have gained tremendous popularity in the health-care industry, opening new possibilities in diagnostic routines and medical treatments, numerous hardware systems have been presented since, which allows for continuous acquisition of various bio signals, like Photoplethysmogram and which are suited for ambulatory setting.

The importance Photoplethysmogram signal in clinical medicine is increasing, in nowadays this technique are used in many clinics, to improve the quality the signals. Regard to the PPG, certain quality indices have been proposed to evaluate the signal conditions.

Although there are many published works relating to the Photoplethysmography signal, in this paper we will examine what is the photoplethysmography, as well some methods in this case mathematical models, diagnostic characteristic on the base of photoplethysmograph signal. This will help to amplify the study and methods in hospital, clinics to improve in knowledge in photoplethysmogram signal.

There has been a resurgence of interest in the technique in recent years, driven by the demand for low cost, simple and portable technology for the primary care and community based clinical settings, the wide availability of low cost and small semiconductor components, and the advancement of computer-based pulse wave analysis techniques.

In order to introduce the methodology, first it starts start by presenting some background of photoplethysmogram and explains why it should be applied. After that, an introduction is given about the agile development methodology to explain its key elements in detail.

Photoplethysmography (PPG) technology has been used to develop small, wearable, pulse rate sensors. These devices, consisting of infrared light-emitting diodes (LEDs) and photo detectors, offer a simple, reliable, low-cost means of monitoring the pulse rate noninvasively. Recent advances in optical technology have facilitated the use of high-intensity green LEDs for PPG, increasing the adoption of this measurement technique.

Wearable pulse rate sensors based on photoplethysmography have become increasingly popular, with more than ten companies producing these sensors commercially. The principle behind PPG sensors is optical detection of blood volume changes in the micro vascular bed of the tissue. The sensor system consists of a light source and a detector, with red and infrared (IR) light-emitting diodes (LEDs) commonly used as the light source.

The PPG sensor monitors changes in the light intensity via reflection from or transmission through the tissue. The changes in light intensity are associated with small variations in blood perfusion of the tissue and provide information on the cardiovascular system, in particular, the pulse rate. Due to the simplicity of this device, wearable PPG pulse rate sensors have been developed.