

## **Real-Time Nonintrusive Heart Rate Measurement: Comparative Case Study of LED Sensorics' Accuracy and Benefits in Heart Monitoring**

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**Abstract :** In recent years, many researchers are focusing on non-intrusive measuring methods when it comes to human biosignals. These methods provide solutions for everyday use, whether it's health monitoring or finessing the workout routine. One of the biggest issues with these solutions is that the sensors' accuracy is highly variable due to many factors, such as ambient light, skin color diversity, etc. That is why we wanted to explore different outcomes under those kinds of circumstances in order to find the most optimal algorithm(s) for extracting heart rate (HR) information. The optimization of such algorithms can benefit the wider, cheaper, and safer application of home health monitoring, without having to visit medical professionals as often when it comes to observing heart irregularities. In this study, we explored the accuracy of infrared (IR), red, and green LED sensorics in a controlled environment and compared the results with a medically accurate ECG monitoring device.

**Keywords :** data science, ECG, heart rate, holter monitor, LED sensors

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