

# **THE GLOVE3, A NEW DEVICE FOR MEASUREMENT OF VITAL SIGNS**

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## **ABSTRACT**

Heart rate, respiratory rate, body temperature, oxygen saturation, and blood pressure are the main vital signs of the human body [1]. Monitoring of these parameters can provide information about the general health status of patients. In general, each vital parameter is measured with a different device.

In this paper we present the details of a preclinical prototype for measurement of heart and respiratory rate plus oxygen saturation. This device is embedded in a glove that has an optical sensor to record the photoplethysmographic (PPG) signal from the patient. The optical module situated on the palmar side of the glove uses a reflection mode pulse oximeter at 25 degrees incidence. Further, the PPG signal is recorded and transmitted wirelessly by a Shimmer sensor node situated on the dorsal side of the glove. On the same side a solar cell is located which is used to charge the battery of the glove system. The PPG signals are received by a laptop and processed in real time to extract the vital signs.

To measure the vital signs, the nurse or the doctor simply touches the patient skin while using the glove. We evaluated the glove on 10 healthy volunteers. The respiratory and heart rate errors were under 4 breaths respective beats per minute when compared with reference. This device can be used in rural areas by doctors to evaluate the general health status of patients. In addition, the glove can communicate with smart phones where databases can be generated.

## **REFERENCES**

- [1] M. Elliot and A. Coventry, Critical care: the eight vital signs of patient monitoring, Vol. 21(10), pp. 621-625, (2012)