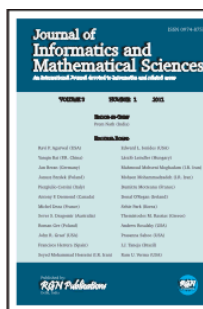




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Low Cost Real-Time Portable Pulse Oximeter with Wireless Network

T. V. Omotosho, C. E. Allison, S. A. Akinwumi

Abstract

To facilitate quicker detection of symptoms of cardiovascular and respiratory disorders, the use of smaller portable wireless sensors which consume less power is an essential requirement. Wireless pulse oximeter are convenient devices which aid to remotely monitor a patient's heart rate and blood oxygen saturation (SpO₂). The result of this study shows a developed portable, low cost device which can be used to measure the heart rate, and SpO₂ of an individual. To this end, a small pulse oximeter was developed; which used an elastic transmissive mode finger probe to measure the heart rate and SpO₂. The device could successfully measure these vital signs and display on a LCD screen. The readings taken from individual for a period of one minute shows average heart rate of 75.6 bpm at zero offset and the average SpO₂ readings derived from the device was 98.7% at zero offset. The model designed is also rechargeable to make it more sustainable for use in rural areas where there is insufficient power supply. The prototype pulse oximeter designed is portable, consumes less power and capable of sending processed measured data to an online database via a WLAN network thereby satisfying the criteria for sustainable telemedicine. This device is therefore recommended for use in local hospitals and remote medical centre to aid easier detection and prevention of critical medical diseases.

Keywords

Pulse oximetry; Blood oxygen saturation; Heart rate; Telemedicine

References

J. Bailey, M. Fecteau and N.L. Pendleton, Wireless Pulse Oximeter, Worcester Polytechnic Institute, p. 67 (2008).

D. Choudhary, R. Kumar and N. Gupta, Real-time health monitoring system on wireless sensor network, International Journal of Advance Innovations, Thoughts and Ideas 1 (2012), 38 – 43.

P. Dhvani, Designing heart rate, blood pressure and body temperature sensors for mobile on-call system, Electrical and Biomedical Report 4B16, McMaster University, Hamilton, Ontario, Canada, p. 46 (2010).

C.E. Ekpenyong, N. Udokang, E. Akpan and T. Samson, Double burden, non-communicable diseases and risk factors evaluation in Sub-Saharan Africa: The Nigerian Experience, European Journal of Sustainable Development 2 (1) (2012), 249 – 270.

K. Li and S. Warren, A wireless reflectance pulse oximeter with digital baseline control for unfiltered photoplethysmograms, IEEE Transactions on Biomedical Circuits and Systems 6 (3) (2012), 269 – 278.

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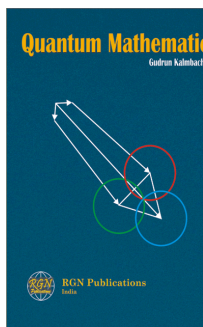
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S. Lopez, Pulse oximeter fundamentals and design, retrieved May 2016, from Freescale Semiconductors, <http://www.freescalesemiconductors.com>, p. 39 (2012).

M.J. Morón, E. Casilari, R. Laque and J.A. Gázquez, A wireless monitoring system for pulse-oximetry sensors, University of Málaga, Spain, Dpto. Tecnología Electrónica, Almería, Spain (2005).

C.S. Pattichis, E. Kyriacou, S. Voskarides, M.S. Pattichis and C.N. Schiza, Wireless telemedicine systems: an overview, IEEE Antennas' and Propagation Magazine 44 (2) (2002), 143 – 153.

S. Surana, R. Patra, S. Nedeveschi and E. Brewer, Deploying a rural wireless telemedicine system: experiences in sustainability, Computer 8 (2008), 48 – 56.

Wikipedia, Pulse Oximetry, retrieved December 27, 2016, from wikipedia.org/pulseoximetry (2016a).

Wikipedia, Telemedicine, retrieved December 2016, from wikipedia.org/telemedicine (2016b).

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