

Conferences > 2010 Annual International Con... ?

Online heart rate estimation in unstable ballistocardiographic records

Publisher: IEEE Cite This PDF

Eduardo C. Pinheiro ; Octavian A. Postolache ; Pedro S. Girão All Authors

6 Paper Citations283 Full Text Views

Export toCollabratec

Alerts

ManageContent Alerts

Add to CitationAlerts

More Like This

Analysis of Deformities in Lung Using Short Time Fourier Transform Spectrogram Analysis on Lung Sound
2011 International Conference on Computational Intelligence and Communication Networks
Published: 2011

Heart Sounds Separation From Lung Sounds Using Independent Component Analysis
2005 IEEE Engineering in Medicine and Biology 27th Annual Conference
Published: 2005

Show More

Abstract

Document Sections

I. Introduction

II. Implementation Overview

III. Results and Discussion

IV. Conclusions

Authors

Figures

References

Citations

Keywords

Metrics

More Like This

DownlPDF

Abstract:When recording the pressure oscillations of a seated subject two distinct effects are assessed, ample vibrations due to the person's movement, and periodic oscillations o... **View more**

Metadata
Abstract:
When recording the pressure oscillations of a seated subject two distinct effects are assessed, ample vibrations due to the person's movement, and periodic oscillations of small amplitude due to cardiopulmonary activity, expressed by the ballistocardiogram (BCG). Embedding a pressure sensor in a chair's back or seat allows unobtrusive monitoring of the BCG. However, inconspicuously acquired signals are affected by numerous artifacts, often generated by the subject's forgetfulness, and posture changes due to lack of constrains. Moreover, the signal changes considerably its shape from person to person, and when the seating posture, or conversely, sensor position, is different. For real-time continuous monitoring, it is still to be found a method which, without introducing significant delays, can deal with such volatility. Thus, tailored calibration of peak detectors and other algorithms is recurrent, and even so, the neighboring samples of artifacts are possibly untreatable. This work evaluates the advantages of Empirical Mode Decomposition, as well as a coarser demodulation approach of the BCG signal, as dependable methods to allow real-time heart rate estimation on unstable BCG records. An analysis of the Fourier transform of the demodulated signals is the method used to provide and compare robustness of heart rate estimates.

Published in: 2010 Annual International Conference of the IEEE Engineering in Medicine and Biology

Date of Conference: 31 Aug.-4 Sept. 2010 INSPEC Accession Number: 11660000

Date Added to IEEE Xplore: 11 November DOI: 10.1109/IEMBS.2010.5627539 2010

ISBN Information:

Publisher: IEEE

ISSN Information:

Conference Location: Buenos Aires, Argentina

PubMed ID: 21096778

Contents

I. Introduction

CARDIOVASCULAR and respiratory activity unobtrusive assessment is a striking purpose that has been subject to much attention lately. With the latest technological developments, non-invasive systems based on ballistocardiography, contactless electrocardiography, and plethysmography are being considered as solutions for accurately, continuously, and non-invasively assessing the cardiovascular system status, by monitoring the heart and respiration rates, and estimating blood pressure [1]–[3].

Authors	▼
Figures	▼
References	▼
Citations	▼
Keywords	▼
Metrics	▼

IEEE Personal Account	Purchase Details	Profile Information	Need Help?	Follow
CHANGE USERNAME/PASSWORD	PAYMENT OPTIONS	COMMUNICATIONS PREFERENCES	US & CANADA: +1 800 678 4333	f in t
	VIEW PURCHASED DOCUMENTS	PROFESSION AND EDUCATION	WORLDWIDE: +1 732 981 0060	
		TECHNICAL INTERESTS	CONTACT & SUPPORT	

IEEE Account	Purchase Details	Profile Information	Need Help?
» Change Username/Password	» Payment Options	» Communications Preferences	» US & Canada: +1 800 678 4333
» Update Address	» Order History	» Profession and Education	» Worldwide: +1 732 981 0060
	» View Purchased Documents	» Technical Interests	» Contact & Support