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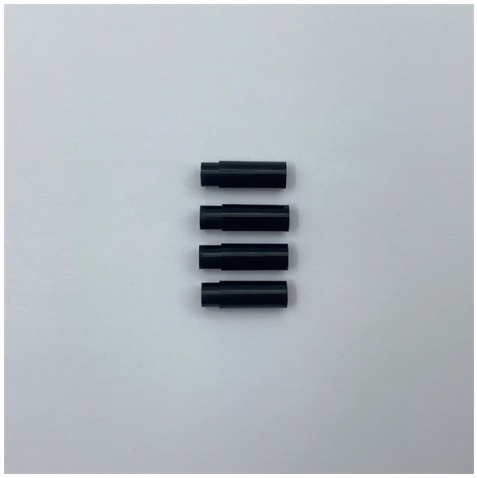
BCG based on fiber optic sensing



Overview

These systems can collect information from the vibrations in the chest due to blood pumping and the movements generated by breathing, known as ballistocardiography (BCG). This work presents the development of a sensor based on fiber optics, developing a sensitive area with a. Abstract: In order to achieve portable heart rate signal acquisition and analysis, and to benchmark the precision of electrocardiogram testing, a heart rate demodulation system based on fiber optic sensing is proposed. A new phase modulation method based on a moving-coil transducer is developed to address the problem of signal fading in the optical fiber. The aim of this work is to present a method for accurately estimating heart and respiration rates under different actual conditions based on a mattress which was integrated with an optical fiber sensor.

Article Content

BCG signal analysis based on improved VMD algorithm

Based on the use of fiber optic sensing, an algorithm for heart rate signal analysis with optimized variational modal decomposition (OVMD) is proposed. Fiber Bragg Grating Sensors (FBGs)

A Robust Deep Learning Strategy for Long-Term Sequence Mapping

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In this article, we proposed a noninvasive cushion-based optical fiber sensor (OFS) with a deep learning model. The key novelty of our research is to develop a deep learning model feasible

Compressed sensing framework for BCG signals based on the optical

Abstract: A compressed sensing (CS) framework is built for ballistocardiography (BCG) signals, which contains two parts of an optical fiber sensor-based heart monitoring system with a CS module and an

Ballistocardiography monitoring system based on optical fiber ...

In conclusion, in our work, we demonstrate a BCG monitoring system based on an optical fiber interferometer adopting a new phase modulation method, which can remove the baseline drift to

Non-contact assessment of cardiac physiology using FO-MVSS-based ...

In this study, we aim to investigate the relationship between changes in BCG waveforms, as detected by fiber-optic micro-vibration sensing system (FO-MVSS), and the various phases of the...

Frontiers | Accurate Estimation of Heart and

During the estimation, a ballistocardiogram (BCG) signal, which was obtained from the optical fiber sensor, was used for extracting the heart rate and

Ballistocardiography sensor based on polymeric optical fiber: a ...

These systems can collect information from the vibrations in the chest due to blood pumping and the movements generated by breathing, known as ballistocardiography (BCG). This work presents the

Frontiers | Accurate Estimation of Heart and Respiration Rates Based

During the estimation, a ballistocardiogram (BCG) signal, which was obtained from the optical fiber sensor, was used for extracting the heart rate and the respiration rate.

Fiber Optic Faraday Rotators Market: $747.48M (2023), 5.38% CAGR

Fiber Optic Faraday Rotators market value reached $747.48M in 2023, projecting 5.38% CAGR. Analyze key growth drivers and competitive strategies for informed decisions.

Temperature Stability of Optical Fiber Transmission Spectrum at Small ...

This approach improves the transmission temperature stability of the fiber, which is of great significance for improving sensor performance and suppressing noise, and paves the way for more reliable and

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BCG equipment and signal based on optical fiber

Download scientific diagram | BCG equipment and signal based on optical fiber sensor. (A) Fiber-optic cables. (B) A patient lying on the device with the

Noninvasive Measurement of Vital Signs With the Optical Fiber Sensor ...

Request PDF | Noninvasive Measurement of Vital Signs With the Optical Fiber Sensor Based on Deep Learning | As a vital sign of human, ballistocardiography (BCG) signal is widely used

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Fiber Optics and Types

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Enhanced sensing properties of optical ammonia sensor based on electrospun fibers containing Eosin-Y and silver nanoparticles MATERIALS TODAY COMMUNICATIONS (IF:4.5) 2024

Wearable Optical Fiber Beat Frequency Digital Sensing System for

An optical fiber beat frequency sensing system (BFSS) for multiple human physiological parameters monitoring is proposed. To the best of the authors'' knowledge, this is the first BFSS ever

Fiber Optic Temperature Sensing and Measurement

Fiber optic temperature sensors are immune to the many environmental effects that compromise other measurement technologies, can be embedded and installed

Quality evaluation of ballistocardiogram from fiber optic sensors using ...

Evaluating the quality of ballistocardiogram (BCG) is crucial for enhancing the accuracy of subsequent physiological parameter extraction. The micro-bend fiber optic BCG sensor and fiber

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