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Main Topic

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Aims and Scope

The *International Journal for Biomedicine and Healthcare* is an online journal publishing submissions in English or Czech languages. The journal aims to inform the readers about the latest developments in the field of biomedicine and healthcare, focusing on multidisciplinary approaches, new methods, results and innovations. It will publish short format papers reporting about advances in a special field of biomedicine and healthcare, abstracts of conference submissions, case-studies, essays and articles that explore how science, education and policy are shaping the world and vice versa, editorial commentary, opinions from experts, information on projects, new equipment and innovations.

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Computer-Assisted Evaluation of Videokymographic Data

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Abstract

Videokymography is a novel medical imaging method used in laryngology and phoniatrics for observation and diagnosis of vocal fold vibrations. The amount and the quality of the data hamper manual feature extraction. A computer-assisted extraction could facilitate the diagnostic process. The proposed solution offers a software tool for data enhancement and extraction of typical characteristics of vocal folds vibrations designed by experts. The proposed methodology is based on digital image processing methods, namely image denoising, image segmentation, and object detection. Such approach enables to reflect specific features of videokymographic images and extracted vocal fold parameters. We have tested the proposed solutions on a representative set of videokymographic data. The comparison of the achieved results with the visually detected features proved the method applicability. The algorithms were implemented into the VKFD (videokymography feature detection) software.

Keywords

Videokymography, image processing, computer-assisted evaluation

Nuchal Translucency Quality Review Using Exponentially Weighted Moving Average Chart

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Abstract

Objectives: To design an exponentially weighted moving average (EWMA) chart for nuchal translucency (NT) quality review and assess its performance compared to cumulative sum (CUSUM) chart.

Methods: Optimal λ for EWMA chart was selected using simulation. Twenty series of 2000 random measurements were generated and the ability to detect the shift and subsequent normalisation for various λ was assessed. The performance of EWMA chart was compared to previously described CUSUM model using the real dataset of fetal NT measurements over a two-year period.

Results: Optimal λ of 0.02 was selected having the same ability to detect undesired shift in a process and with lower probability of false alarm being raised compared to CUSUM. A set of 7575 NT measurements were used for constructing EWMA and CUSUM charts. EWMA model showed close agreement with CUSUM but with the advantage of ability to indicate promptly the rectification of the process to in-control thus being more appropriate for long-term prospective as well as retrospective NT quality review. Moreover, it showed a lower chance to raise false alarm compared to CUSUM.

Keywords

Nuchal translucency, exponentially weighted moving average, control chart, cumulative sum, ultrasound

