Dynamic time warping (DTW) algorithm towards accurate radiographic images diagnostic system

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Typical X-ray images produced using conventional screen-film procedure has a limited field of view and failed to achieve the entire long bone visualization on a single image. To produce images with whole spinal parts, digitized images from the films contain portions of the spinal parts are merged using image stitching methods. Panorama image creation is a process of over-laying a set of images taken at different view-points and different time into one coordinate system to generate a wider viewing panoramic image. The most important step in panorama image is image stitching whose components are image registration and image blending. In image registration, portions of consecutive images are modeled to find a transformation position which aligns the images. In this paper, a novel Image Stitching method, which utilizes dynamic time warping algorithm that provides a measure of similarity and matching points between a numbers of radiographic X-ray images is developed to provide accurate spinal deformities diagnosis. The effectiveness of the proposed method is demonstrated in the experiments. As a result, DTW is able to detect the similar points in stitched images. It is found that the proposed technique achieves high detection accuracy with less processing time.

Diagnostic value of contrast-enhanced ultrasound for the differentiation of breast lesions: A meta-analysis

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The objective of this study was to systematically review and evaluate the diagnostic accuracy of contrast-enhanced ultrasound (CEUS) in differential diagnosis of benign and malignant breast lesions. The scientific literature databases PubMed and Embase were comprehensively searched for relevant studies before January 2015. Data were pooled to yield summary sensitivity, specificity, positive likelihood ratios (PLR), negative likelihood ratios (NLR), and diagnostic odds ratio (DOR) using Meta-Disc Version 1.4 software. A total of 31 studies with 2395 lesions were considering eligible following predefined criteria. The pooled sensitivity, specificity and DOR was 0.88 (95% CI, 0.86-0.90) and 0.80 (95% CI, 0.78-0.82), respectively. The pooled positive and negative likelihood radios was 4.18 (95% CI, 3.01-5.80), and 0.16 (95% CI, 0.11-0.24), respectively. The pooled DOR of was 30.36 (95% CI, 16.41-56.14) and the area under the curve (AUC) of SROC was 0.9136 (standard error: 0.0226). In the subgroup analysis, the pooled results of real time gray scale or harmonic modality with second generation contrast agents groups were significant better than other groups. All subgroup analysis did not diminish the heterogeneity due to variability in study factors. There was no significant publication bias according to Deeks' funnel plot asymmetry test. In conclusion, the comprehensive results suggested that CEUS could be a potential reliable method for differential diagnosis of benign and malignant breast lesions, the second generation contrast agents increase diagnostic accuracy of CEUS and real time gray scale and harmonic modality could be more suitable to perform CEUS.

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