عنوان مقاله:

Mandibular Trabecular Bone Analysis Using Local Binary Pattern for Osteoporosis Diagnosis

محل انتشار:

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خلاصه مقاله:

Background: Osteoporosis is a systemic skeletal disease characterized by low bone mineral density (BMD) and micro-architectural deterioration of bone tissue, leading to bone fragility and increased fracture risk. Since Panoramic image is a feasible and relatively routine imaging technique in dentistry; it could provide an opportunistic chance for screening osteoporosis. In this regard, numerous panoramic derived indices have been developed and suggested for osteoporosis screening. Jaw trabecular pattern is one of the main bone strength factors and trabecular bone pattern assessment is important factor in bone quality analysis. Texture analysis applied to trabecular bone images offers an ability to exploit the information present on conventional radiographs. Objective: The purpose of this study was to evaluate the relationship between Jaw trabecular pattern in panoramic image and osteoporosis based on image texture analyzing using local binary pattern.Material and Methods: An experiment is evaluated in this paper based on a real hand-captured database of panoramic radiograph images from osteoporosis and non-osteoporosis person in Namazi Hospital, Shiraz, Iran .An approach is proposed for osteoporosis diagnosis consisting of two steps. First, modified version of local binary patterns is used to extract discriminative features from jaw panoramic radiograph images. Then, classification is done using different classifiers. Results: Comparative results show that the proposed approach provides classification accuracy about ۹۹.۶%, which is higher than many state-of-the-art methods. Conclusion: High classification accuracy, low computational complexity, multi-resolution and rotation invariant are among advantages of our proposed approach.

کلمات کلیدی:

Osteoporosis, Panoramic, Texture Analysis, Local Binary Pattern