

Design of CAD System of Solitary Pulmonary Nodule with Harmony Classification and Fuzzy System

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ABSTRACT

Introduction: Lung cancer is the most wide spread from of cancer, with the highest mortality rate worldwide. In this study, a computer-aided detection (CAD) system was developed for lung nodule detection, segmentation and recognition using CT images. So, we use a highly accurate supervised that uses lung images with the aim of assisting physicians in early detection of lung cancer.

Methods: First, we segmented the lung area by masking techniques to isolated nodules and determined region of interest. Then, 24 features were extracted from images that included morphological, statistical and histogram. Important features were derived from the images for their posterior analysis with the aid of a harmony search algorithm and fuzzy systems.

Results: In order to evaluate the performance of the proposed method, we used the LIDC database. the number of images included a database of 97 images whom 47 were diagnosed with lung cancer. Results of the base method show a sensitivity of 93%.

Conclusion: The harmony search algorithm is optimized using fuzzy system for classification. The CAD system provides 93.1% accuracy.

KEYWORDS: Lung cancer, Solitary pulmonary nodule , CT image, Harmony algorithm, Fuzzy system.

1. Declaration of conflicts

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2. Authors' biography

No biography.

3. References

No references.