

## Multi-Stage Classification for Lung Lesion Detection on CT Scan Images Applying Medical Image Processing Technique

**Authors :** Behnaz Sohani, Sahand Shahalinezhad, Amir Rahmani, Aliyu Aliyu

**Abstract :** Recently, medical imaging and specifically medical image processing is becoming one of the most dynamically developing areas of medical science. It has led to the emergence of new approaches in terms of the prevention, diagnosis, and treatment of various diseases. In the process of diagnosis of lung cancer, medical professionals rely on computed tomography (CT) scans, in which failure to correctly identify masses can lead to incorrect diagnosis or sampling of lung tissue. Identification and demarcation of masses in terms of detecting cancer within lung tissue are critical challenges in diagnosis. In this work, a segmentation system in image processing techniques has been applied for detection purposes. Particularly, the use and validation of a novel lung cancer detection algorithm have been presented through simulation. This has been performed employing CT images based on multilevel thresholding. The proposed technique consists of segmentation, feature extraction, and feature selection and classification. More in detail, the features with useful information are selected after featuring extraction. Eventually, the output image of lung cancer is obtained with 96.3% accuracy and 87.25%. The purpose of feature extraction applying the proposed approach is to transform the raw data into a more usable form for subsequent statistical processing. Future steps will involve employing the current feature extraction method to achieve more accurate resulting images, including further details available to machine vision systems to recognise objects in lung CT scan images.

**Keywords :** lung cancer detection, image segmentation, lung computed tomography (CT) images, medical image processing

**Conference Title :** ICIATAIP 2023 : International Conference on Image Analysis Techniques in Agriculture and Image Processing

**Conference Location :** Lisbon, Portugal

**Conference Dates :** October 30-31, 2023