NEURAL NETWORK IN THE CHARACTERIZATION OF FIBROSIS AND SCAR CARCINOMA USING LUNG CT IMAGES

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Abstract

Lung Cancer is also the most common cause of cancer deaths worldwide 1.38 million deaths per year. Patients with lung cancer are often misdiagnosed as pulmonary tuberculosis leading to delay in the correct diagnosis as well as exposure to inappropriate medication. The diagnosis of tuberculosis and lung cancer can be difficult as symptoms of both diseases are similar in CT images. In India, where communicable diseases like pulmonary tuberculosis are rampant may causes fibrosis, henceforth there is a need to differentiate scar carcinoma from simple fibrosis. The aim of this research work is to design a fully automated CAD for characterizing fibrous and scar related adenocarcinoma tissues without human intervention using lung Computed Tomography (CT) images. The gray-level spatial dependence matrix approach is used for extracting texture based features that are given to Neural Network (NN) Classifier and its performance is also evaluated using Receiver Operating Characteristics (ROC). For the cases studied, the proposed method differentiates fibrous and scar related carcinomous tissues without human intervention. Thus, the proposed automated image based classifier could act as a precursor to histopathological analysis, thereby creating way to class specific treatment procedures.