Liver Tumor Detection by Classification through FD Enhancement of CT Image

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Abstract : In this paper, an approach for the liver tumor detection in computed tomography (CT) images is represented. The detection process is based on classifying the features of target liver cell to either tumor or non-tumor. Fractional differential (FD) is applied for enhancement of Liver CT images, with the aim of enhancing texture and edge features. Later on, a fusion method is applied to merge between the various enhanced images and produce a variety of feature improvement, which will increase the accuracy of classification. Each image is divided into NxN non-overlapping blocks, to extract the desired features. Support vector machines (SVM) classifier is trained later on a supplied dataset different from the tested one. Finally, the block cells are identified whether they are classified as tumor or not. Our approach is validated on a group of patients' CT liver tumor datasets. The experiment results demonstrated the efficiency of detection in the proposed technique.