

Classifier for Liver Ultrasound Images

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Abstract : Liver cancer is the most common cancer disease worldwide in men and women, and is one of the few cancers still on the rise. Liver disease is the 4th leading cause of death. According to new NHS (National Health Service) figures, deaths from liver diseases have reached record levels, rising by 25% in less than a decade; heavy drinking, obesity, and hepatitis are believed to be behind the rise. In this study, we focus on Development of Diagnostic Classifier for Ultrasound liver lesion. Ultrasound (US) Sonography is an easy-to-use and widely popular imaging modality because of its ability to visualize many human soft tissues/organs without any harmful effect. This paper will provide an overview of underlying concepts, along with algorithms for processing of liver ultrasound images. Naturally, Ultrasound liver lesion images are having more spackle noise. Developing classifier for ultrasound liver lesion image is a challenging task. We approach fully automatic machine learning system for developing this classifier. First, we segment the liver image by calculating the textural features from co-occurrence matrix and run length method. For classification, Support Vector Machine is used based on the risk bounds of statistical learning theory. The textural features for different features methods are given as input to the SVM individually. Performance analysis train and test datasets carried out separately using SVM Model. Whenever an ultrasonic liver lesion image is given to the SVM classifier system, the features are calculated, classified, as normal and diseased liver lesion. We hope the result will be helpful to the physician to identify the liver cancer in non-invasive method.

Keywords : segmentation, Support Vector Machine, ultrasound liver lesion, co-occurrence Matrix

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