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(57) Abstract :

ABSTRACT AN-EFFICIENT MRF MODELS FOR DETECTION OF BRAIN ABNORMALITY BASED ON MR IMAGES Image segmentation with a focus on Magnetic Resonance (MR) images of brain has become very essential in diagnosis of abnormality in the brain. Identification of gray scale values of brain tissues is complex in nature because inhomogeneity. Identifying brain disorders deeply depend upon perfect segmentation of three brain tissues namely Cerebro-Spinal Fluid (CSF), White Matter (WM) and-Gray Matter (GM) of MR image. The segmentation methods addressed in the literature could neither able to yield the labeling nor identify the boundaries of an image to locate the tumor and effected area. In this work, initially, the brain MR image scgmentation has been performed by using statistical and stochastic models such as Histogram thresholding, Region Growing method, K-means method and Expectation Maximization (EM) algorithm to identify tumor with and without noise in brain MRI. These are simple threshold, distance based segmentation techniques and do not consider spatial information while processing, which is an important parameter in the image scgmentation. Finally, Hidden Markov Random Field (HMRF) model developed, in this model, the systems believe a Markov process with latent or hidden states and the dependence of the output on the state is noticeable, sven though the state is hidden. The results obtained from Hidden Markov Random Field model are compared with Fuzzy- MRF model. Finally, it is observed that the segmentation results obtained from HMRF model are more accurate in terms of quality metrics more effective in dealing images in a noise environment

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