RESEARCH ARTICLE

BRAIN TISSUE SEGMENTATION FROM MAGNETIC RESONANCE IMAGE USING PARTICLE SWARM OPTIMIZATION ALGORITHM

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Abstract- Magnetic Resonance Imaging is one of the best technologies currently being used for diagnosing brain tumor. Brain tumor is diagnosed at advanced stages with the help of the MRI image. Segmentation is an important process to extract suspicious region from complex medical images. Intelligent system is designed to diagnose brain tumor through MRI using image processing algorithms such as Particle Swarm Optimization. The proposed system is having three phases. In the first phase, preprocessing is performed to remove the film artifacts and unwanted skull portions in brain MRI image. In the second phase, enhancement is performed to remove noise in brain MRI image. In the third phase, Particle Swarm Optimization is implemented for segmenting tissues such as WM (White Matter), GM (Grey Matter) and CSF (Cerebrospinal Fluid) in brain MRI image. The segmented brain MRI helps the radiologists in detection of brain abnormalities and tumor. The algorithm is tested for 50 real patient's brain MRI image.
Keywords – Magnetic Resonance Imaging; Preprocessing; Enhancement; Segmentation; Particle Swarm Optimization

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