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Detection of parkinson's disease in *Homo sapiens* using supervised approach

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Cognitive impairment is an early stage symptom of premature onset dementia. About 20-50% of neurodegenerative Parkinson's Disorder (PD) occur due to non-motor cognitive abilities like memory power. Modern brain imaging techniques such as Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), Single-Photon Emission Computed Tomography (SPECT) and so on, have been used for early attack diagnosis of PD with a wide stretch. Existing works made a manual discrimination of control from PD affected. In this paper, we propose supervised approach based automated PD labelling system, which effectively identifies parkinson's disease in *Homo sapiens*. We used Parkinson's Progression Marker Initiative (PPMI) dataset and considered OSTU algorithm for segmenting the affected super colliculus region of brain. In this work, we compared various spatial texture feature extraction techniques such as Gabor Filter (GF), Fast Fourier Transform (FFT), Fused GF-FFT, two level FFT-GF and two-level GF-FFT on the segmented region of both affected and not affected brain images. A supervised approach is used to classify as parkinson's disease affected or not affected based on their features of segmented region. Finally, the recital of the proposed system is estimated based on its recognition accuracy, which attained the maximum of 85% when we use two level GF-FFT feature extraction for the detection of parkinson disease affected person.

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