

## The Accuracy of Parkinson's Disease Diagnosis Using [123I]-FP-CIT Brain SPECT Data with Machine Learning Techniques: A Survey

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**Abstract :** Objective: To discuss key issues in the diagnosis of Parkinson disease (PD), To discuss features influencing PD progression, To discuss importance of brain SPECT data in PD diagnosis, and To discuss the essentiality of machine learning techniques in early diagnosis of PD. An accurate and early diagnosis of PD is nowadays a challenge as clinical symptoms in PD arise only when there is more than 60% loss of dopaminergic neurons. So far there are no laboratory tests for the diagnosis of PD, causing a high rate of misdiagnosis especially when the disease is in the early stages. Recent neuroimaging studies with brain SPECT using 123I-Ioflupane (DaTSCAN) as radiotracer shown to be widely used to assist the diagnosis of PD even in its early stages. Machine learning techniques can be used in combination with image analysis procedures to develop computer-aided diagnosis (CAD) systems for PD. This paper addressed recent studies involving diagnosis of PD in its early stages using brain SPECT data with Machine Learning Techniques.

**Keywords :** Parkinson disease (PD), dopamine transporter, single-photon emission computed tomography (SPECT), support vector machine (SVM)

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