The Shape and Surface Features of Parkinson's SPECT Scans and Their Applications

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Abstract

This study proposes to obtain an optimal ellipse and an optimal 3D surface equation to approximate the 2D- and 3D-SPECT striatum, respectively, by the Particle Swarm Optimization algorithm. The coefficients of the optimal ellipse and 3D surface equation, together with the characteristics of Parkinson's image identification mentioned in the literature, are employed to learn a Parkinson's disease image classifier under a machine learning framework. The empirical results reveal that the coefficients of the optimal ellipse and the optimal 3D surface equation are capable of improving the classification accuracy.

Keywords：Parkinson’s disease, PSO algorithm, surface equation