

Report of the Analysis

Benchmark Function : Sphere/Parabola Function

Number of PSO runs : 5

PSO Performance : The actual global minimum of the function is 0. For 2 and 3 dimensions, the PSO performed perfectly, that is, it found the best fitness to be 0 for both cases. For 20 dimensions, the best fitness was 3.5079×10^{-6} , which is also impressive. However, for 30 dimensions the PSO gave the best fitness as 0.14185.

Code Runtime for different dimensionalities :

nDim = 2 : 1.515309 seconds

nDim = 3 : 1.598593 seconds

nDim = 20 : 1.725443 seconds

nDim = 30 : 2.237225 seconds

Specifications of the Computer used :

CPU Clock Speed: 3.30 GHz

RAM: 16 GB

Number of Processing Cores: 8