Abstract

This paper introduces hybridization of particle swarm optimization (PSO) with genetic algorithm (GA) denoted as PSO+GA provides an efficient approach which is used to solve non linear chaotic datasets. The proposed algorithm employed in probabilistic neural network (PNN) which is a variant of radial basic function artificial neural network (RBFANN) for finding precise value spread factor for accurate classification of chaotic time series. Hybridizing of particle swarm optimization (PSO) and genetic algorithm (GA) in social learning helps collective efficiency, robustness and global effectiveness. The hybrid approached which then is resulted in the integrated framework for complete determination of spread factor with evaluation parameters. The algorithm is tested on two benchmark problems and compared the performance with arbitrary spread factor of PNN. The results showed that the PSO+GA based heuristic optimization algorithm outperform in terms of higher classification and prediction accuracies with short computation time.

References
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**Index Terms**

Computer Science  
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**Keywords**

Particle swarm optimization (PSO), probabilistic neural network (PNN), convergence, benchmark, genetic algorithm (GA), radial basic function artificial neural network (RBFANN).