Population based optimization algorithms improvement using the predictive particles

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Abstract

A new efficient improvement, called Predictive Particle Modification (PPM), is proposed in this paper. This modification makes the particle look to the near area before moving toward the best solution of the group. This modification can be applied to any population algorithm. The basic philosophy of PPM is explained in detail. To evaluate the performance of PPM, it is applied to Particle Swarm Optimization (PSO) algorithm and Teaching Learning Based Optimization (TLBO) algorithm then tested using 23 standard benchmark functions. The effectiveness of these modifications are compared with the other unmodified population optimization algorithms based on the best solution, average solution, and convergence rate.

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