No	Method	Standard Parameter	Biological Inspiration	Advantage
1	GA	Population size Selection Crossover Mutation,	Inspired by the theory of natural evolution	Vast application
2	PSO	No. of population Learning rate Inertia weight	Social behaviour of bird flocking or fish schooling	Simple algorithm
3	FA	Light intensity variation Attractiveness of firefly	Process of bioluminescence of firefly	Efficient determine local maxima
4	ABC	No. of population Employed and unemployed foraging bees Food sources	Natural foraging of bee honey	Less control parameters
5	TLBO	Population size No of generations	Model from teaching & learning principal in classroom	Fast convergence
6	SSO	No. of population Gradient coefficient Momentum rate Velocity limiter	Inspired from shark hunt of the injured prey in the ocean	Simple algorithm

The SSO has many significant benefits like; good convergence acceleration, fitting for wide search space, powerful neighborhood search characteristic, higher feasibility and efficiency in producing global optima.

(I) Shark Smell Optimization, SSO is a new swarm intelligence optimization algorithm proposed by Abedinia O in 2016. Compared to conventional optimization algorithms such as particle swarm, based on the shark's spiral hunting mechanism, the shark smell algorithm is characterized by few parameters, so it has a strong local search capability.

(II) For the conventional multi-objective unification target method such as linear weighting, there is a problem that subjective parameters are selected blindly in the calculation. Because the target demand vector can be selected objectively according to the actual situation, the angle cosine of solution vector and target demand vector as evaluating index is more objective and reasonable.

(III) Train running process optimization is an extremely complicate optimization decision problem, in the late iteration, it is easy to fall into local convergence. Therefore, in the later period of the optimization iteration, it is necessary to filter the individuals who are close to the extremum but not are sufficiently optimized to prevent these individuals from confining the population to a local area. However, using Euclidean distance or Mahalanobis distance as the distance measure cannot accurately reflect the actual distance. In this paper, a method of local convergence inhibition is proposed by using the fusion distance based on Mahalanobis distance and Euclidean distance as the distance measure indicator in the later stage of the iterative optimization process to enhance the global convergence performance of the optimization algorithm.