fitness < worst fitness

Proposed Method

“FDB Selection”

No

Yes

Evaluate the fitness of generated electromagnetic particle

Discard the generated electromagnetic particle

Add the generated electromagnetic particle into sorted population and discard the worst electromagnetic particle

Change only one electromagnet of generated electromagnetic particle with randomly generated electromagnet within the range

rand (0, 1) < R\_rate

i <= N\_var

i = i + 1

Decide the new position by Eq 1

Set the new position as selected electromagnet from positive field

rand (0, 1) < Ps\_rate

Select one electromagnet from N\_emp instead of I\_neg using the FDB selection method

rand (0, 1) < N\_var / (100 \* 5)

Select one random electromagnet from position i of electromagnetic particles of each field (overall 3)

i = 1

Display the best solution

Termination criteria satisfied

Sort the population based on fitness and divide it into tree fields

Initialize a population of electromagnetic particles and evaluate the fitness