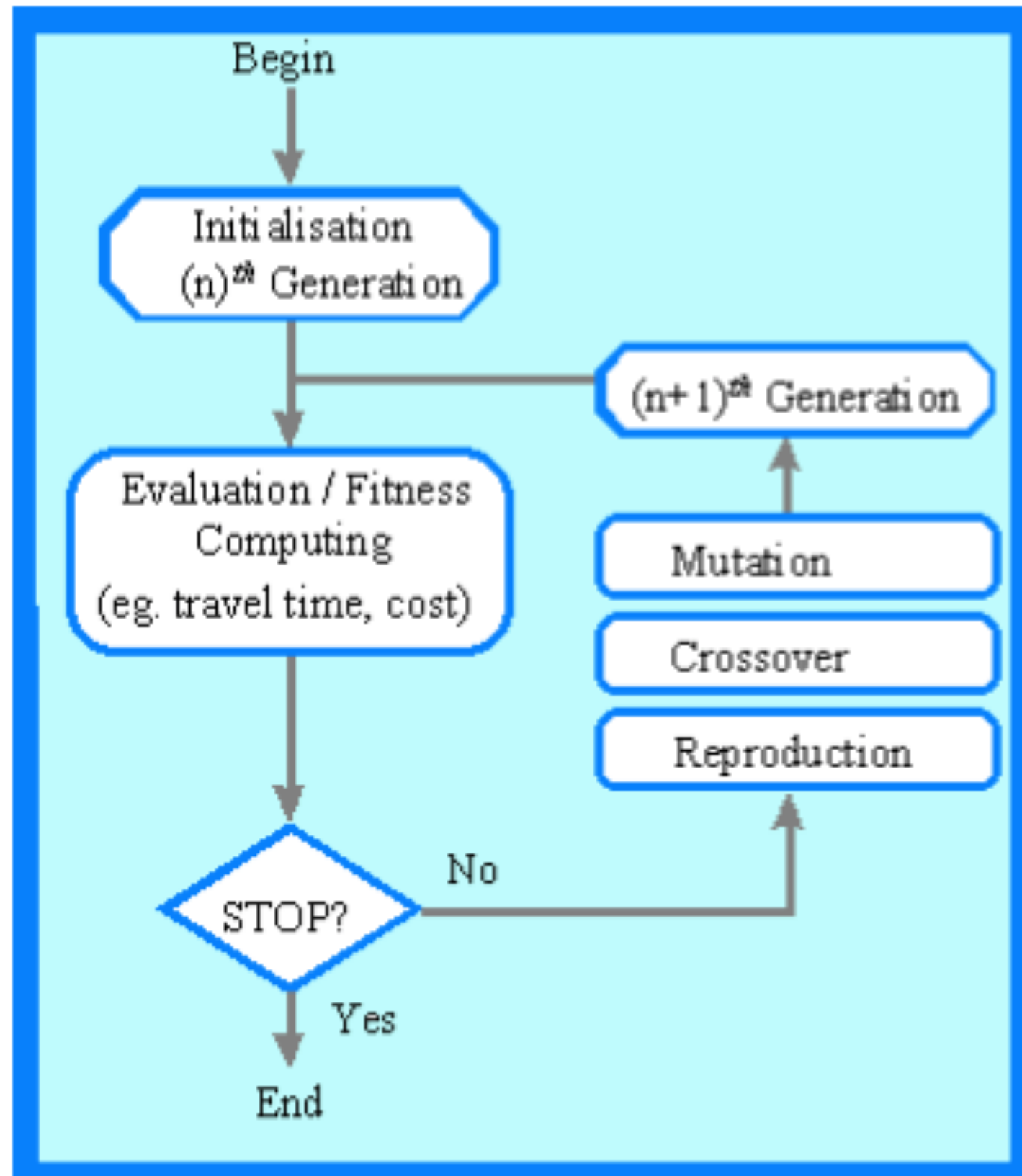


Flow chart for Genetic Algorithm.



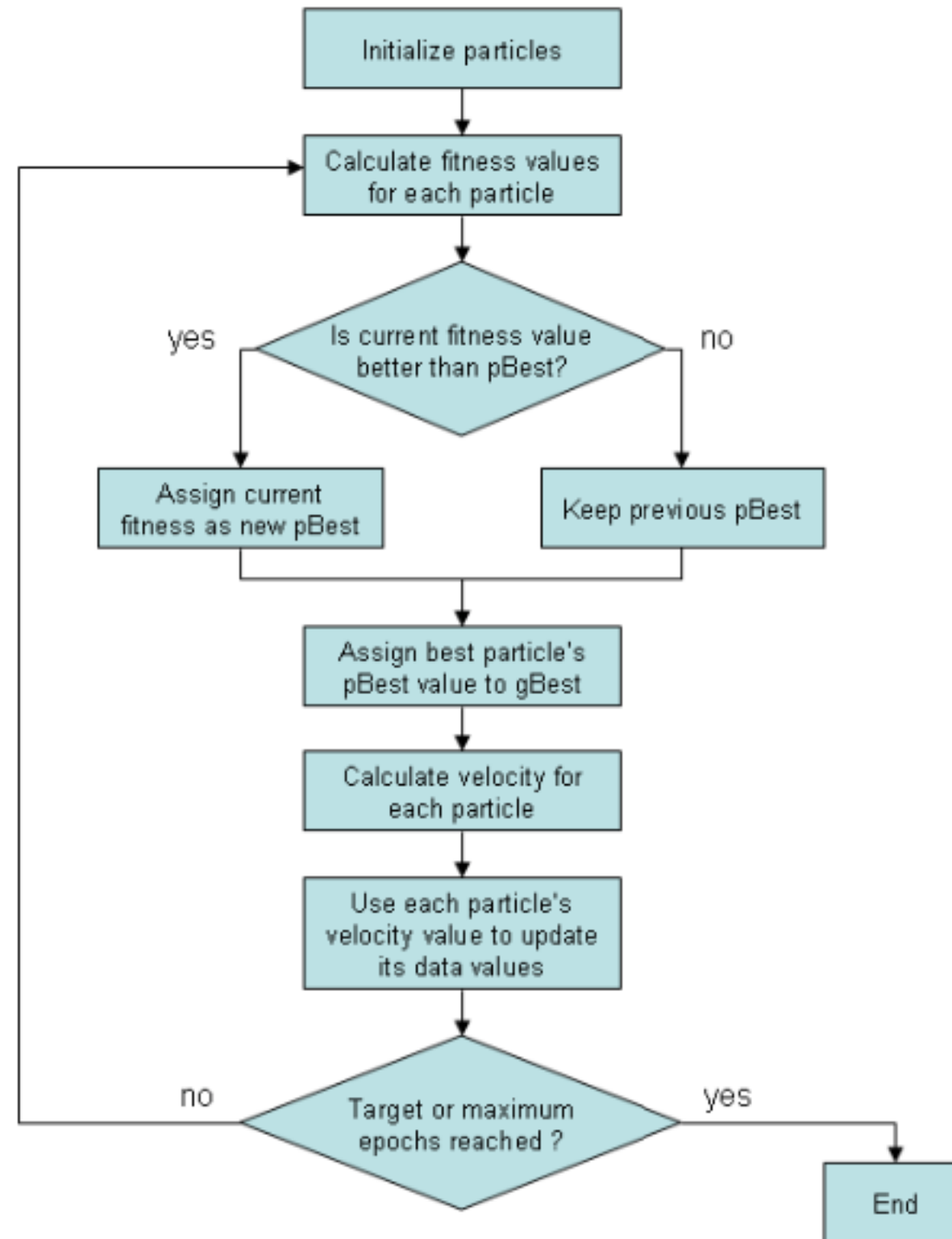


Fig 12: Flowchart for PSO

Hybrid 2: Genetic Algorithm and Particle Swarm Optimisation

- Method
 1. Perform PSO on the problem for a fixed but reduced number of iterations.
 2. PSO performed instead of the mutation operation of mutation operation of the genetic algorithm.
 3. Genetic algorithm is allowed to run uninterrupted
 4. Particle from PSO with value GBest introduced inside the pool.

HYBRID-2 Algorithm

Step 1) Create the initial chromosome. A chromosome will be a random colors assigned to vertices of the graph.

Step 2) Create a pool of such chromosome.

Step 3) Calculate the validity of such chromosomes using a CHECK function. It will make sure the chromosomes have a valid coloring and replace the conflicting colors.

Step 5) Calculate the fitness of each of the valid chromosome.

Step 6) Repeat for a fixed number of iterations.

Step 6.1) Call the Crossover function (the function is called only when the probability is above the crossover probability)

Step 6.1.1) Select the two best chromosome.

Step 6.1.2) Choose a point of crossover

HYBRID-2 Algorithm contd.

Step 6.1.3) Generate two new chromosomes by replacing the information of the chromosome beyond the crossover point.

Step 6.1.3) Call the check function to see if the chromosomes are valid.

Step 6.1.4) Calculate the fitness of the newly generated chromosomes and add them in the pool by replacing the worst.

Step 6.2) Perform PSOGCP instead of Mutation (This function is called only when a mutation probability is met)

Step 6.2.1) The generated solution after a given number of PSOGCP iteration is obtained and introduced in the pool after calculating the fitness.

Step 6.3) Sort the chromosomes according to the fitness

Step 6.4) Continue till a fixed number of iteration to find the most optimum solution.