Supplementary Document

"A Comparative study of meta-heuristics for local path planning of mobile robot"

1: Input: Objective function *f*, constraints, and the dimensions of the problem.
2: \\ Initialization
3: Assign parameter values to *PopSize, KELossRate, Stepsize, buffer,InitialKE, γ, InterRate, w, c_1, c_2.*
4: Let Pop be the set of molecules (particle) 1, 2..., *Popsize*
5: **for** each of molecules (particles) **do**
6: Assign random solution to the molecular structure (particle position) *w*
7: Calculate the fitness by *f(w)*
8: Set *PSOCoe*= 0
9: **end for**
10: \\Iterations
11: **while** (the stopping criteria not met) **do**
12: Select a molecule M_w from Pop randomly
13: **If** $PSOCoe_{Mw} > \gamma$ **then**
14: *PSOUpdate (M_w)*
15: $PSOCoe_{Mw}=0$
16: **else**
17: Generate *r* ε [0, 1]
18: **If** *r>InterRate* **then**
19: Randomly select molecule M_{w1}
20: *IntermolecularIneffectiveCollision(M_w,M_{w1})*
21: $PSOCoe_{Mw} = PSOCoe_{Mw} + 1$
22: $PSOCoe_{Mw1} = PSOCoe_{Mw} + 1$
23: **else**
24: *OnwallIneffectiveCollision(M_w)*
25: $PSOCoe_{Mw1} = PSOCoe_{Mw} + 1$
26: **end if**
27: **end if**
28: Check for any new minimum solution
29: **end while**
30: \\ The final stage
31: Output the best solution found and its objective function value

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Figure S1:Pseudo code for HPCRO(Nguyen et al. 2014)

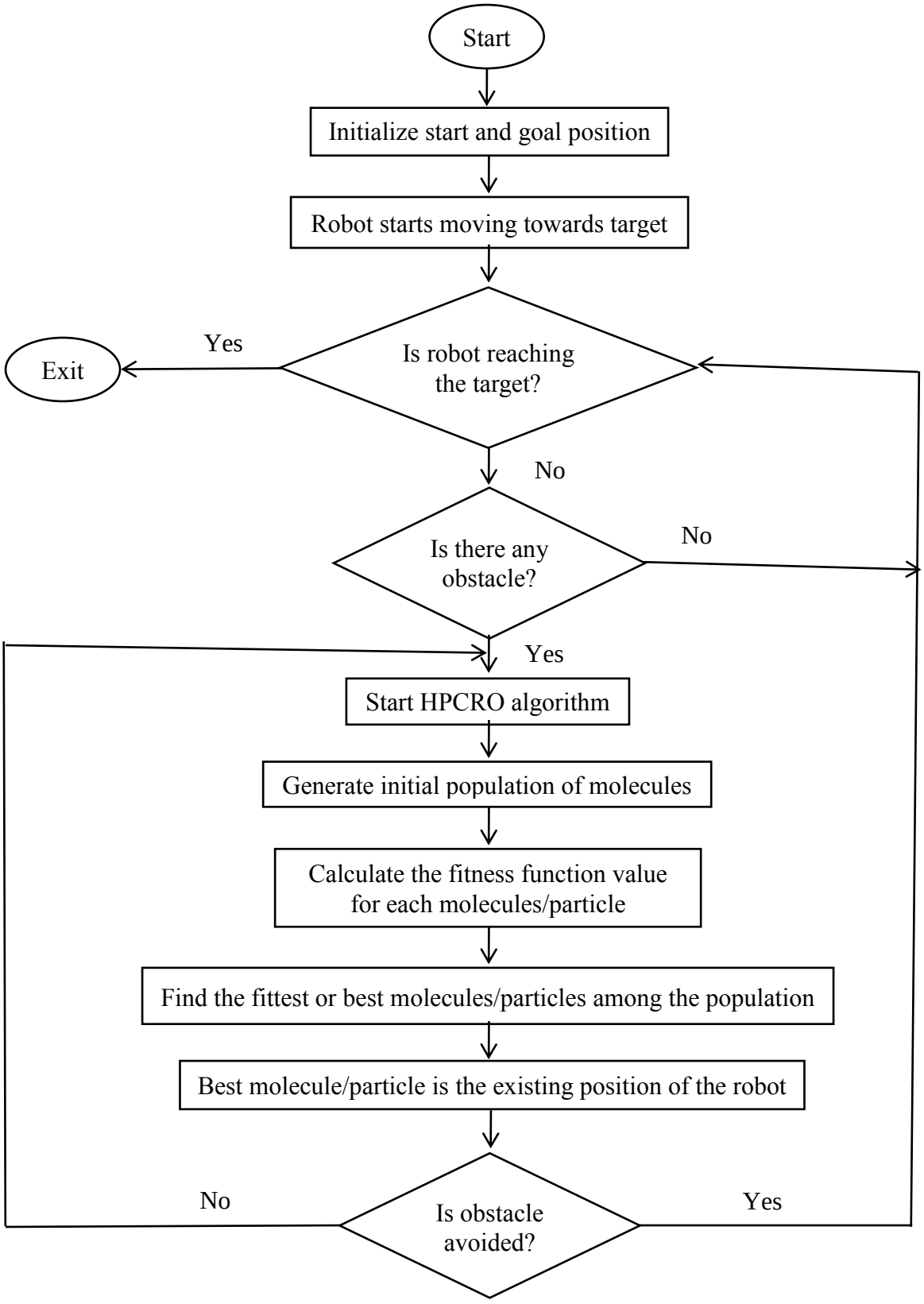

Figure S2**:** Implementation of the HPCRO algorithm