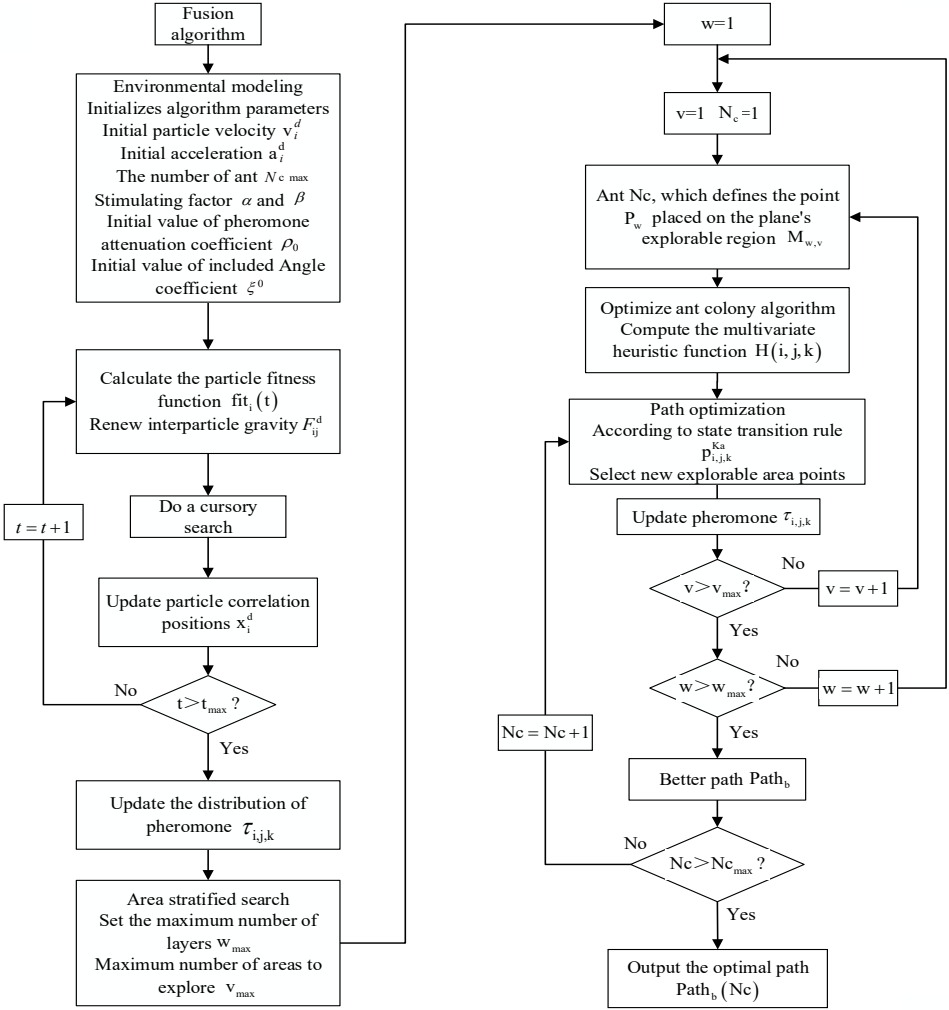
Fusion algorithm
Environmental modeling
Initializes algorithm parameters
Initial particle velocity v_i^d
Initial acceleration a_i^d
The number of ant $N_{c\ max}$
Stimulating factor α and β
Initial value of pheromone attenuation coefficient ρ_0
Initial value of included Angle coefficient ξ^0
Calculate the particle fitness function $fit_i(t)$
Renew interparticle gravity F_{ij}^d
Do a cursory search
$t = t + 1$
Update particle correlation positions x_i^d
No
$t > t_{max}$?
Yes
Update the distribution of pheromone $\tau_{i,j,k}$
Area stratified search
Set the maximum number of layers w_{max}
Maximum number of areas to explore v_{max}
w=1
v=1 N_c=1
Ant Nc, which defines the point P_w placed on the plane's explorable region $M_{w,v}$
Optimize ant colony algorithm
Compute the multivariate heuristic function $H(i,j,k)$
Path optimization
According to state transition rule $p_{i,j,k}^{Ka}$
Select new explorable area points
Update pheromone $\tau_{i,j,k}$
No
$v > v_{max}$?
$v = v + 1$
Yes
No
$w > w_{max}$?
$w = w + 1$
Yes
$Nc = Nc + 1$
Better path $Path_b$
No
$Nc > Nc_{max}$?
Yes
Output the optimal path $Path_b(Nc)$