**Future Enhancenment**

In the future, to further improve the convergence rate of the algorithm, the effect of different periods on the improved partial opposition operation probability should be considered. In addition, even though the method proposed in this paper reduces the run time required for package queries in the large-scale data environment to some extent, it still has the potential for further optimization. The parallel strategy mainly adopts parallel computing to reduce the run time, but there is no parallel strategy for obtaining the optimal solution of the centroid and no parallel replacement scheme for multiple sub-problems