

Retraction

Retracted: The HSABA for Emergency Location-Routing Problem

Mathematical Problems in Engineering

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Mathematical Problems in Engineering has retracted the article titled “The HSABA for Emergency Location-Routing Problem” [1] due to substantial similarity with the equations presented in a previously published article that also modelled the emergency location-routing problem, which were not cited [2].

The similarities are as follows:

- (1) The two-stage model in [1], from Equation (1) to Equation (23), on page 4 and 5 is directly taken from the two-stage model on page 165 of [2]
- (2) The linearization technique in [1], from Equation (24) to Equation (29), on page 5 is directly taken from Equation (23) to Equation (28) on page 166 in [2]
- (3) The converted single-stage model in [1], from Equation (30) to Equation (59), on pages 5 and 6 is directly taken from Equation (29) to Equation (59) on page 167 in [2]
- (4) The parameters and variables in Tables 1 and 2 in [1] are the same as those on page 164 in [2]

The authors apologized for the unattributed reuse of this model. They said they used the hybrid self-adaptive bat algorithm (HSABA), a nature-inspired algorithm, to this location-routing problem, a hard optimization problem. The HSABA with self-adaptation mechanism and hybridization mechanism effectively improves the defect of the original BA, i.e., easily being trapped in local optima. Moreover, they changed the traveling time function and used the function of the Bureau of Public Roads (BPR). In their model, they not only considered the total costs, including the operational costs of vehicles and the resettlement cost of warehouses, but also considered the total delivery time including the traveling time from the supply location to the demand point, the routing time between warehouses, and the shipping time

from external supply location to warehouse. They also simplified some constraints of the previous model that may induce the mistakes in the program, running faster and not falling into local optima.

References

- [1] S. Luan, Q. Yang, H. Zhou et al., “The HSABA for Emergency Location-Routing Problem,” *Mathematical Problems in Engineering*, vol. 2019, Article ID 5391687, 12 pages, 2019.
- [2] A. M. Caunhye, Y. Zhang, M. Li, and X. Nie, “A location-routing model for prepositioning and distributing emergency supplies,” *Transportation Research Part E: Logistics and Transportation Review*, vol. 90, pp. 161–176, 2016, <https://www.sciencedirect.com/science/article/pii/S1366554515002033>.