Dataset Explanation

There are three different datasets. Table 1 shows the datasets.

Table 1Datasets

Dataset name	File name	Number of cities	Number of customers
3-60	3-60.csv	3	60
4-40	4-40.csv	4	40
5-30	5-30.csv	5	30

In every dataset, there are nodes, x values, y values, time windows alternative start times, and time window alternative end times. Table 2 shows column names and explanations.

Table 2 Column names and explanations

Column name	Explanation
Node	Node ID for every node. Node 0 is the depot. Other nodes are customers.
x	x coordinate value
y	y coordinate value
Alternative 1 start time	Start time of the first alternative time window.
Alternative 1 end time	End time of the first alternative time window.
Alternative 2 start time	Start time of the second alternative time window.
Alternative 2 end time	End time of the second alternative time window.
Alternative 3 start time	Start time of the third alternative time window.
Alternative 3 end time	End time of the third alternative time window.

Table 3 shows a sample dataset. The depot is Node 0. The depot's location is (20, 21) on the coordinate system. The depot has no time window alternatives, so a big number is given to alternative 1 end time. Every customer has (x, y) locations and three time windows.

Table 3 Sample dataset

Node	x	y	Alternative 1 start time	Alternative 1 end time	Alternative 2 start time	Alternative 2 end time	Alternative 3 start time	Alternative 3 end time
0	20	21	0	99999999	0	0	0	0
1	23	23	0	30	150	180	90	120
2	21	30	180	210	0	30	30	60
3	27	23	180	210	0	30	360	390
4	25	29	0	30	30	60	150	180
…	…	…	…	…	…	…	…	…

The datasets are used in the paper titled "Multi-objective Optimization for Green Delivery Routing Problems with Flexible Time Windows" (Gülmez et al., 2024).

References

Gülmez, B., Emmerich, M., & Fan, Y. (2024). Multi-objective Optimization for Green Delivery Routing Problems with Flexible Time Windows. *Applied Artificial Intelligence*, *38*(1). https://doi.org/10.1080/08839514.2024.2325302