A Grammar-based Genetic Programming Hyper-Heuristic for Corridor Allocation Problem

Supplementary Material

Rafael F.R. Correa[1 [0000−0002−3900−2869]], Heder S. Bernardino[1 [0000−0001−9227−9202]], João M. de Freitas[1 [0000−0001−9227−9202]], Stênio S.R.F. Soares[1 [0000−0003−3479−442X]], Luciana B. Gonçalves[1 [0000−0001−8947−1607]], and Lorenza L.O. Moreno[1 [0000−0001−5335−6252]]

Universidade Federal de Juiz de Fora (UFJF), Juiz de Fora, BRAZIL
{rafaelfreesz,heder,joao,ssoares,lbrugiolo,lorenza}@ice.ufjf.br

Abstract. This document contains supplementary material referring to the work of [1], presenting the comparative table of results and other informations.

1 Comparative Tables

This Section presents the comparative result between this work and the Basic Variable Neighborhood Search (BVND) presented by [2], the best result known in the literature. Table 1 presents the comparisons for instances of size $n \leq 56$. Likewise, Table 2 presents comparisons for instances of size $n \geq 60$.

For both tables, the first column shows the name of the instances. The second and third columns present the result of Herran and Correa, respectively. The last column presents the Gap obtained between the two works.

Table 1: Comparative results for instances with size $n \leq 56$.

Instance	Best Cost		GAP %
	BVNS	GGPHH Variant	
S9	1181.5	**1181.5**	0.00
S9H	2294.5	**2294.5**	0.00
S10	1374.5	**1374.5**	0.00
S11	3439.5	**3439.5**	0.00
Am12a	1529.0	**1529.0**	0.00
Am12b	1609.5	**1609.5**	0.00
Am13a	2467.5	**2467.5**	0.00
Am13b	2870.0	**2870.0**	0.00
Am15	3195.0	**3195.0**	0.00
N25.01	2302.0	**2302.0**	0.00
N25.02	18595.5	**18595.5**	0.00
N25.03	12114.0	12116.0	0.02
N25.04	24192.5	24214.5	0.09
N25.05	7819.0	**7819.0**	0.00
N30.01	4115.0	**4115.0**	0.00
N30.02	10779.5	10781.5	0.02
N30.03	22702.0	**22702.0**	0.00
N30.04	28401.5	28411.5	0.04
N30.05	57400.0	57437.0	0.06
P1	30282.5	30312.5	0.10
P2	33974.0	33985.0	0.03
P3	35052.5	35068.5	0.05
P4	34666.5	34675.5	0.03
P5	30771.0	30787.0	0.05
P6	34424.5	34438.5	0.04
ste36.01	4966.0	**4966.0**	0.00
ste36.02	87390.0	88466.0	1.23
ste36.03	50084.5	50713.5	1.26
ste36.04	46737.5	46992.5	0.55
ste36.05	44488.5	44974.5	1.09
N40.01	53722.5	53740.5	0.03
N40.02	48908.0	48925.0	0.03
N40.03	39250.5	39263.5	0.03
N40.04	38354.0	38383.0	0.08
N40.05	51496.0	51544.0	0.09
Sko42.01	12731.0	**12731.0**	0.00
Sko42.02	108006.5	108071.5	0.06
Sko42.03	86644.5	86684.5	0.05
Sko42.04	68701.0	68771.0	0.10
Sko42.05	124017.5	124075.5	0.05
Sko49.01	20470.0	**20470.0**	0.00
Sko49.02	208058.0	208160.0	0.05
Sko49.03	162182.0	162344.0	0.10
Sko49.04	118246.5	118307.5	0.05
Sko49.05	332836.0	333033.0	0.06
Sko56.01	31972.0	31983.0	0.03
Sko56.02	248219.0	248279.0	0.02
Sko56.03	85184.0	85218.0	0.04
Sko56.04	156646.0	156758.0	0.07
Sko56.05	296176.5	296270.5	0.03

Table 2: Comparative results for instances with size $n \geq 60$.

Instance	Best Cost		GAP %
	BVNS	GGPHH Variant	
AKV.60.05	159643.0	159763.0	0.08
CAP.30.30.1	204089.0	204287.0	0.10
CAP.30.30.2	193199.5	193407.5	0.11
CAP.30.30.3	161475.5	161793.5	0.20
CAP.30.40.1	135133.5	135294.5	0.12
CAP.30.40.2	159114.0	159324.0	0.13
CAP.30.40.3	158967.5	159103.5	0.09
CAP.30.50.1	110493.5	110736.5	0.22
CAP.30.50.2	115302.0	115513.0	0.18
CAP.30.50.3	114137.0	114337.0	0.18
CAP.30.60.1	108117.0	108184.0	0.06
CAP.30.60.2	109908.5	110049.5	0.13
CAP.30.60.3	91619.0	91882.0	0.29
CAP.60.30.1	445377.5	445473.5	0.02
CAP.60.30.2	407890.5	408051.5	0.04
CAP.60.30.3	416912.5	417003.5	0.02
CAP.60.40.1	313304.0	313371.0	0.02
CAP.60.40.2	320758.5	320807.5	0.02
CAP.60.40.3	363020.5	363137.5	0.03
CAP.60.50.1	273420.0	273527.0	0.04
CAP.60.50.2	269680.5	269917.5	0.09
CAP.60.50.3	295419.0	295552.0	0.05
CAP.60.60.1	227896.0	227945.0	0.02
CAP.60.60.2	246523.0	246628.0	0.04
CAP.60.60.3	206486.5	206635.5	0.07
CAP.90.30.1	628850.0	628934.0	0.01
CAP.90.30.2	561170.5	561212.5	0.01
CAP.90.30.3	587816.5	587852.5	0.01
CAP.90.40.1	474046.0	474088.0	0.01
CAP.90.40.2	479963.0	480022.0	0.01
CAP.90.40.3	512452.0	512509.0	0.01
CAP.90.50.1	479683.0	479768.0	0.02
CAP.90.50.2	445030.0	445105.0	0.02
CAP.90.50.3	495052.5	495054.5	0.00
CAP.90.60.1	385430.5	385456.5	0.01
CAP.90.60.2	344775.0	344784.0	0.00
CAP.90.60.3	411205.0	411284.0	0.02
Sko64.05	250870.5	250924.5	0.02
AKV.70.05	2109745.5	2110528.5	0.04

References

1. Correa, R., Moreno, L., Bernardino, H., Soares, S.S.R.F., Gonçalves, L.B., de Freitas, J.: A grammar-based genetic programming hyper-heuristic for corridor allocation problem. In: BRACIS 2022 () (nov 2022)

2. Herrán, A., Colmenar, J.M., Duarte, A.: An efficient variable neighborhood search for the space-free multi-row facility layout problem. European Journal of Operational Research **295**(3), 893–907 (2021)