Results of ILS trials

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1. Introduction

Comparison of ILS, with different implementations, applied to some symmetric TSP instances (available in TSPLIB [TspLib]). For 2, the first column gives the instance name and its size. The next columns give the best cost, taken over 10, 100, 1000, and 10,000 iterations, using: (i) a *sequential* **2-opt** ILS with one **double-bridge** perturbation; (ii) a *Parallel*, multi-processing, using *OpenMP* with 16 threads, for (i); (iii) a **3-opt** ILS get from [Helena R. Lorenço and STUTZLE]. The best results are taken over 5 trials on each instance.

For 4, the first column gives the instance name and its size. The next columns give the best elapsed time, in seconds, taken over 10 iterations, using: (i) a *sequential* **2-opt** ILS with one **double-bridge** perturbation; (ii) a *Parallel*, multi-processing, using *OpenMP* with 16 threads, for (i); (iii) a **3-opt** ILS get from [Helena R. Lorenço and STUTZLE]. The best results are taken over 5 trials on each instance.

2. Trials results

2.1. Costs

Table 1. Solution of each symmetric TSP instance for sequential ILS (unidades de distância)

Instance	10	100	1000	stutzle-ILS
d198	17021.6317	-	-	15780
a280	2780.0581	-	-	-
lin318	49162.1405	-	-	42029
pcb442	54070.6827	-	-	50778
rat783	9646.5388	-	-	8806
u1060	241261.4121	-	-	224152
pcb1173	62503.0046	-	-	-
fl1577	24752.7216	-	-	-

2.2. Elapsed Time

References

Helena R. Lorenço, O. M. and STUTZLE, T. Iterated local search.

TspLib. Disponível em: http://comopt.ifi.uni-heidelberg.de/software/TSPLIB95/. Acesso em: 11 de setemrbo 2023.

Table 2. Solution of each symmetric TSP instance for Parallel ILS (unidades de distância)

Instance	10	1000	10000	stutzle-ILS
d198	17054.9741	16554.2572	16112.5758	15780
a280	2793.7148	-	-	-
lin318	49639.3621	-	-	42029
pcb442	54172.2698	-	-	50778
rat783	9627.1802	-	-	8806
u1060	244687.4781	-	-	224152
pcb1173	62949.1236	-	-	-
fl1577	25138.3416	24697.4189	-	-

Table 3. Avarege elapsed time of each symmetric TSP instance for sequential ILS (s)

Instance	10	100	1000	stutzle-ILS
d198	0,4752	-	-	-
a280	1,2901	-	-	-
lin318	2,27834	-	-	-
pcb442	6,00174	-	-	
rat783	39,5637	-	-	-
u1060	111,7043	-	-	-
u1173	137,25596	-	-	-
fl1577	335,30134	-	-	-

Table 4. Avarege elapsed time of each symmetric TSP instance for Parallel ILS (s)

Instance	10	1000	10000	stutzle-ILS
d198	0.18112	6.9057	77.0607	-
a280	0.48454	-	-	-
lin318	0,75212	-	-	-
pcb442	1,59504	-	-	
rat783	11,43294	-	-	-
u1060	36,61086	-	-	-
u1173	42,79226	-	-	-
fl1577	146,09608	2h 18min	-	-