Ciência da Computação

Heurísticas e Metaheurísticas

Uso de Metaheurísticas para encontrar soluções aproximadas para os problemas Knapsack e Travelling Salesman Problem - GRASP, ILS e VNS

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1 Travelling Salesman Problem

Execuções das metaheurísticas para o problema do TSP variando parâmetros

1.1 GRASP

1.1.1 Entrada tsp_51 variando iterações

	10	100	1000
1	609.1865873263687	606.6614387255415	596.4918133141288
2	582.5204840552394	597.4938276518312	622.1007172869214
3	606.7513695447957	597.5151012763989	613.8478604518614
4	570.3118622370853	605.7820624888119	587.0344575642107
5	625.36216663295	602.7460157247973	601.549858377253
6	614.2022741638747	586.4569001158972	580.5663836467503
7	611.2105023458761	594.62877505134	605.2138449174112
8	620.461527900328	601.1954576516638	610.8435203335379
9	604.3213986522348	586.2839766884438	616.3278982109149
10	601.0013483400646	603.923895594574	593.7289989697293
best	570.3118622370853	586.2839766884438	580.5663836467503
mean	604.53295211988	598.26874509693	602.77053530727

1.1.2 Entrada tsp_5 variando iterações

	10	100	1000
1	106.99075448309482	106.99075448309482	106.99075448309482
2	106.99075448309482	106.99075448309482	106.99075448309482
3	106.99075448309482	106.99075448309482	106.99075448309482
4	106.99075448309482	106.99075448309482	106.99075448309482
5	106.99075448309482	106.99075448309482	106.99075448309482
6	106.99075448309482	106.99075448309482	106.99075448309482
7	106.99075448309482	106.99075448309482	106.99075448309482
8	106.99075448309482	106.99075448309482	106.99075448309482
9	106.99075448309482	106.99075448309482	106.99075448309482
10	106.99075448309482	106.99075448309482	106.99075448309482
best	106.99075448309482	106.99075448309482	106.99075448309482
mean	106.99075448309482	106.99075448309482	106.99075448309482

1.2 ILS

1.2.1 Entrada tsp_51 variando iterações

	1	5	10
1	576.9246529455538	538.2694268379425	562.5056183608482
2	536.6400229409353	560.1555770214788	568.7304456733596
3	534.7971858469737	515.2731682614816	536.6400229409353
4	536.9133141743964	518.9140962921872	591.1362227261753
5	518.9140962921872	551.633966615645	538.4656315550654
6	555.6197111834317	538.4656315550654	515.2731682614816
7	540.3065335100604	515.2731682614816	576.3980363826162
8	568.7304456733596	540.3065335100604	523.7976920627921
9	560.1555770214788	562.5056183608482	540.3065335100604
10	496.58169469929817	551.633966615645	516.4521229826638
mean	542.55832342877	1539.38608253256	546.9705494456
best	496.58169469929817	515.2731682614816	515.2731682614816

1.2.2 Entrada tsp_5 variando iterações

	1	5	10
1	109.00464639796614	109.00464639796614	109.00464639796614
2	109.00464639796614	109.00464639796614	109.00464639796614
3	109.00464639796614	109.00464639796614	109.00464639796614
4	109.00464639796614	109.00464639796614	109.00464639796614
5	109.00464639796614	109.00464639796614	109.00464639796614
6	109.00464639796614	109.00464639796614	109.00464639796614
7	109.00464639796614	109.00464639796614	109.00464639796614
8	109.00464639796614	109.00464639796614	109.00464639796614
9	109.00464639796614	109.00464639796614	109.00464639796614
10	109.00464639796614	109.00464639796614	109.00464639796614
mean	109.00464639796614	109.00464639796614	109.00464639796614
best	109.00464639796614	109.00464639796614	109.00464639796614

1.3 VNS

1.3.1 Entrada tsp_51 variando iterações

	1	5	10
1	994.0119260021661	1039.4860824733553	895.0464876497738
2	1136.3891202540244	1032.4182802052583	912.842643288102
3	1111.4597169846045	940.309777841609	1022.7090907268741
4	1174.917465199187	998.3627932005605	998.8656653421485
5	1060.432154836591	921.451018008837	877.39777515039
6	1232.0957692074865	918.0520750287559	999.9198089614058
7	1173.5965893988061	971.798196460885	951.9521210153982
8	1119.1816995244133	916.9585327785467	899.1023159123827
9	1069.5537239902544	949.8623232717575	958.3559755729126
10	1025.2955351153835	1023.1027341918469	938.7117320116514
mean	1109.6933700513	971.18018134614	945.4903615631
best	994.0119260021661	916.9585327785467	877.39777515039

1.3.2 Entrada tsp_5 variando iterações

	1	5	10
1	106.9907544830948	106.9907544830948	106.9907544830948
2	106.9907544830948	106.9907544830948	106.9907544830948
3	106.9907544830948	106.9907544830948	106.9907544830948
4	106.9907544830948	106.9907544830948	106.9907544830948
5	106.9907544830948	106.9907544830948	106.9907544830948
6	106.9907544830948	106.9907544830948	106.9907544830948
7	106.9907544830948	106.9907544830948	106.9907544830948
8	106.9907544830948	106.9907544830948	106.9907544830948
9	106.9907544830948	106.9907544830948	106.9907544830948
10	106.9907544830948	106.9907544830948	106.9907544830948
mean	106.9907544830948	106.9907544830948	106.9907544830948
best	106.9907544830948	106.9907544830948	106.9907544830948

2 Knapsack Problem

Execuções das metaheurísticas para o problema Knapsack variando parâmetros

2.1 GRASP

2.1.1 Entrada mochila_100_1000 variando iterações

	10	100	1000
1	3296	5347	5353
2	3892	5555	6254
3	5196	5196	6406
4	4954	5551	5453
5	5072	5173	5500
6	4662	5347	6431
7	5120	5219	5736
8	5190	5347	5529
9	5364	5278	5923
10	4808	5417	5923
best	5364	5555	6431
mean	4755.4	5343	5850.8

2.1.2 Entrada mochila_4_20 variando iterações

	1	10	100
1	33	33	33
2	33	33	33
3	33	33	33
4	33	33	33
5	33	33	33
6	33	33	33
7	33	33	33
8	33	33	33
9	33	33	33
10	33	33	33
best	33	33	33
mean	33	33	33

2.2 ILS

2.2.1 Entrada tsp_51 variando iterações

	1	5	10
1	5353	5400	5663
2	5615	5736	5923
3	5923	6135	6157
4	5926	5926	5781
5	5650	6713	6370
6	5615	6254	5736
7	5453	6258	5406
8	6218	5555	5926
9	5923	6218	5453
10	6254	6135	5683
mean	5793	6033	5809.8
best	6254	6713	6370

2.2.2 Entrada tsp_5 variando iterações

	1	5	10
1	33	33	33
2	33	33	33
3	33	33	33
4	33	33	33
5	33	33	33
6	33	33	33
7	33	33	33
8	33	33	33
9	33	33	33
10	33	33	33
mean	33	33	33
best	33	33	33

2.3 VNS

2.3.1 Entrada mochila_100_1000 variando iterações sem melhora

	1	5	10
1	1692	4519	2561
2	1868	2798	4419
3	943	5636	5497
4	3230	3162	4119
5	289	2059	2268
6	1459	494	5097
7	951	3659	3783
8	689	5919	6960
9	1812	3453	2218
10	487	2212	3979
mean	1342	3391.1	4090.1
best	3230	5919	6960

2.3.2 Entrada mochila_4_20 variando iterações sem melhora

	1	5	10
1	35	35	35
2	26	35	35
3	35	35	35
4	35	33	35
5	28	35	35
6	35	33	35
7	35	35	35
8	28	35	35
9	28	35	33
10	33	35	35
mean	31.8	34.6	35
best	35	35	35