

## ANEXO 2- Tabela de execuções do algoritmo

A Tab.1 apresenta os resultados de variação dos parâmetros para uma única execução dos algoritmos, onde estão destacadas as linhas onde encontrou-se o ótimo global e a Tab.2 os resultados de 100 execuções para cada conjunto de parâmetros avaliando AES, MEF e SR.

*Tabela 1. Análise da variação dos parâmetros para uma execução*

Número de gerações	Probabilidade de crossover	Probabilidade de mutação	Elitismo	Distância média percorrida SGA	Distância média percorrida memético
1000	0.1	0.001	0.2	9.522690914	9.323123977
1000	0.1	0.01	0.2	9.945466515	9.745731137
1000	0.1	0.1	0.2	10.68978449	11.66226626
1000	0.1	0.3	0.2	13.55984393	16.16032861
1000	0.3	0.001	0.2	9.396486681	9.396486681
1000	0.3	0.01	0.2	9.563533415	9.27204383
1000	0.3	0.1	0.2	12.36753508	13.36868907
1000	0.3	0.3	0.2	14.48696891	15.05080762
1000	0.5	0.001	0.2	10.1125197	9.695956119
1000	0.5	0.01	0.2	10.62576618	9.845470611
1000	0.5	0.1	0.2	13.59354701	14.5876316
1000	0.1	0.001	0.2	9.287494155	9.287494155
1000	0.1	0.01	0.2	9.311524	9.311524
1000	0.1	0.1	0.2	9.328778872	9.278528223
1000	0.1	0.3	0.2	9.727368213	9.726235727
1000	0.3	0.001	0.2	9.074148048	9.074148048
1000	0.3	0.01	0.2	9.07698292	9.074148048
1000	0.3	0.1	0.2	9.074148048	9.074148048
1000	0.3	0.3	0.2	9.077917743	9.074148048
1000	0.5	0.001	0.2	9.55042889	9.216352333
1000	0.5	0.01	0.2	9.438641541	9.225604866
1000	0.5	0.1	0.2	9.646067053	9.632609783
1000	0.5	0.3	0.2	9.59150193	9.511097788
1000	0.7	0.001	0.2	10.19999915	9.344223498
1000	0.7	0.01	0.2	10.30210312	9.553545148
1000	0.7	0.1	0.2	10.22592125	9.616932837
1000	0.7	0.3	0.2	10.79359219	10.764314
1200	0.1	0.001	0.2	9.423459153	9.423459153
1200	0.1	0.01	0.2	9.077917743	9.074148048
1200	0.1	0.1	0.2	9.074148048	9.074148048
1200	0.1	0.3	0.2	9.074148048	9.074148048
1200	0.3	0.001	0.2	9.213898459	9.213898459
1200	0.3	0.01	0.2	9.192946377	9.077917743
1200	0.3	0.1	0.2	9.074148048	9.074148048
1200	0.3	0.3	0.2	9.074148048	9.074148048
1200	0.5	0.001	0.2	9.448411427	9.213898459

1000	0.1	0.001	0	11.31681545	10.68978892
1000	0.1	0.001	0	9.919220709	9.389605551
1000	0.1	0.001	0	11.33130492	11.19558431
1000	0.1	0.001	0	11.31905895	11.06397711
1000	0.1	0.001	0	10.74900105	10.73089693
1000	0.1	0.001	0	11.09631005	10.67297638
1000	0.1	0.001	0	11.66741995	10.69623247
1000	0.1	0.001	0	11.98466482	11.07348388
1000	0.1	0.001	0	11.31425282	10.63451397
1000	0.1	0.001	0	10.74780143	10.17364529
1000	0.1	0.001	0	10.38669357	9.801353276
1000	0.1	0.001	0	10.46472496	10.17663666
1000	0.1	0.001	0	11.48745839	10.43893937
1000	0.1	0.001	0	10.76650694	10.98587656
1000	0.1	0.001	0	11.34003189	10.86881894
1000	0.1	0.001	0	11.10151598	10.73124757
1000	0.1	0.001	0	11.96815831	11.67532372
1000	0.1	0.001	0	10.11481625	9.659459454
1000	0.1	0.001	0	11.07465591	10.7868573
1000	0.1	0.001	0	10.48166326	10.81113322
1000	0.1	0.001	0	9.925299123	9.692029806
1000	0.1	0.001	0	10.96618571	10.18888658
1000	0.1	0.001	0	11.75966474	10.64510672
1000	0.1	0.001	0	10.99360744	10.47615165
1000	0.1	0.001	0	10.55491793	9.591773446
1000	0.1	0.001	0	10.23152907	9.877264363
1000	0.1	0.001	0	10.7087498	10.0106382
1000	0.1	0.001	0	10.65530542	10.37837121
1000	0.1	0.001	0	11.31681545	10.68978892
1000	0.1	0.001	0	9.919220709	9.389605551
1000	0.1	0.001	0	11.33130492	11.19558431
1000	0.1	0.001	0	11.31905895	11.06397711
1000	0.1	0.001	0	10.74900105	10.73089693
1000	0.1	0.001	0	11.09631005	10.67297638
1000	0.1	0.001	0	11.66741995	10.69623247
1000	0.1	0.001	0	11.98466482	11.07348388
1000	0.1	0.001	0	11.31425282	10.63451397
1000	0.1	0.001	0	10.74780143	10.17364529
1000	0.1	0.001	0	10.38669357	9.801353276
1000	0.1	0.001	0	10.46472496	10.17663666
1000	0.1	0.001	0	11.48745839	10.43893937
1000	0.1	0.001	0	10.76650694	10.98587656
1000	0.1	0.001	0	11.34003189	10.86881894
1000	0.1	0.001	0	11.10151598	10.73124757
1000	0.1	0.001	0	11.96815831	11.67532372
1000	0.1	0.001	0	10.11481625	9.659459454

1000	0.1	0.001	0	11.07465591	10.7868573
1000	0.1	0.001	0	10.48166326	10.81113322
1000	0.1	0.001	0	9.925299123	9.692029806
1000	0.1	0.001	0	10.96618571	10.18888658
1000	0.1	0.001	0	11.75966474	10.64510672
1000	0.1	0.001	0	10.99360744	10.47615165
1000	0.1	0.001	0	10.55491793	9.591773446
1000	0.1	0.001	0	10.23152907	9.877264363
1000	0.1	0.001	0	10.7087498	10.0106382
1000	0.1	0.001	0	10.65530542	10.37837121
1000	0.1	0.001	0.2	15.09311664	15.09311664
1000	0.1	0.001	0.2	10.71584071	10.71584071
1000	0.1	0.001	0.2	10.09175119	9.747066605
1000	0.1	0.001	0.2	12.40664133	12.40664133
1000	0.1	0.001	0.2	12.4135791	12.35178857
1000	0.1	0.001	0.2	12.77611931	12.77611931
1000	0.1	0.001	0.2	13.59628435	12.92698879
1000	0.1	0.001	0.2	12.81829718	12.45452337
1000	0.1	0.001	0.2	11.4201978	10.96148237
1000	0.1	0.001	0.2	9.658877052	9.658877052
1000	0.1	0.001	0.2	12.94951481	12.60662149
1000	0.1	0.001	0.2	12.33371372	11.91621514
1000	0.1	0.001	0.2	13.13759209	13.13759209
1000	0.1	0.001	0.2	10.81411557	10.65169137
1000	0.1	0.001	0.2	12.51143915	11.82196369
1000	0.1	0.001	0.2	11.05248842	11.05248842
1000	0.1	0.001	0.2	11.68162411	11.68162411
1000	0.1	0.001	0.2	12.68339085	11.59510311
1000	0.1	0.001	0.2	13.66653397	13.33864761
1000	0.1	0.001	0.2	11.69872736	11.58318791
1000	0.1	0.001	0.2	9.976040611	9.648970933
1000	0.1	0.001	0.2	11.45826063	10.23776704
1000	0.1	0.001	0.2	12.59337372	12.59337372
1000	0.1	0.001	0.2	13.5130778	13.44303195
300	0.1	0.001	0.2	10.29346962	9.700447969
300	0.1	0.001	0.4	9.589782586	9.507655267
300	0.1	0.001	0	11.57283658	11.65917881
300	0.1	0.01	0.2	10.32752203	9.551827257
300	0.1	0.01	0.4	10.28148007	9.703115931
300	0.1	0.01	0	12.09083008	11.63155184
300	0.1	0.1	0.2	10.10206791	9.917515427
300	0.1	0.1	0.4	9.845874172	9.804692741
300	0.1	0.1	0	11.87390824	11.23674305
300	0.1	0.3	0.2	10.27940603	10.20382511
300	0.1	0.3	0.4	9.79735317	9.704534091
300	0.1	0.3	0	12.26798644	11.73884165

300	0.3	0.001	0.2	10.41255236	9.612142264
300	0.3	0.001	0.4	11.15633538	9.765729691
300	0.3	0.001	0	15.97326012	15.16403103
300	0.3	0.01	0.2	10.82575633	10.10387844
300	0.3	0.01	0.4	10.91449064	10.06975656
300	0.3	0.01	0	16.62887723	16.05269019
300	0.3	0.1	0.2	10.56725511	10.56725511
300	0.3	0.1	0.4	10.75604612	10.7664748
300	0.3	0.1	0	16.87074254	14.94037982
300	0.3	0.3	0.2	10.82929783	10.71022967
300	0.3	0.3	0.4	10.97602213	10.22576107
300	0.3	0.3	0	16.19210301	16.50377951
300	0.5	0.001	0.2	11.5457525	10.76074713
300	0.5	0.001	0.4	11.4432815	10.30767534
300	0.5	0.001	0	17.63678349	17.64812854
300	0.5	0.01	0.2	12.08106824	10.85470951
300	0.5	0.01	0.4	11.67431171	10.52659731
300	0.5	0.01	0	18.06238079	18.17244995
300	0.5	0.1	0.2	11.33163871	10.54561015
300	0.5	0.1	0.4	11.14831466	10.44333788
300	0.5	0.1	0	18.29575811	18.59778763
300	0.5	0.3	0.2	12.11202481	11.5066075
300	0.5	0.3	0.4	12.38583217	12.17494141
300	0.5	0.3	0	17.04816467	17.09482967
300	0.7	0.001	0.2	12.93305488	11.89626015
300	0.7	0.001	0.4	13.07602986	12.17637907
300	0.7	0.001	0	19.60112822	20.02907816
300	0.7	0.01	0.2	12.97527918	11.46353961
300	0.7	0.01	0.4	11.93931445	11.52300368
300	0.7	0.01	0	19.16224223	17.8329209
300	0.7	0.1	0.2	13.08026194	12.54352465
300	0.7	0.1	0.4	12.06814087	12.03737578
300	0.7	0.1	0	20.35496362	19.20547678
300	0.7	0.3	0.2	12.77490404	12.61631068
300	0.7	0.3	0.4	11.32456192	11.37339972
300	0.7	0.3	0	19.26835702	20.18503691
500	0.1	0.001	0.2	9.678781486	9.336038358
500	0.1	0.001	0.4	9.588314016	9.588314016
500	0.1	0.001	0	12.88707104	12.29789946
500	0.1	0.01	0.2	11.2025116	10.94803205
500	0.1	0.01	0.4	9.973904674	9.725317641
500	0.1	0.01	0	11.63874325	11.14344509
500	0.1	0.1	0.2	9.173336078	9.173336078
500	0.1	0.1	0.4	10.30113721	10.16175578
500	0.1	0.1	0	10.67581584	10.29212063
500	0.1	0.3	0.2	9.35328902	9.323077527

500	0.1	0.3	0.4	9.690900178	9.469667479
500	0.1	0.3	0	11.89073639	11.42749954
500	0.3	0.001	0.2	10.40466389	9.989670336
500	0.3	0.001	0.4	9.869386892	9.120823869
500	0.3	0.001	0	15.28018758	15.7965311
500	0.3	0.01	0.2	10.13999278	9.670120401
500	0.3	0.01	0.4	9.407660616	9.112542236
500	0.3	0.01	0	15.30283573	16.1180147
500	0.3	0.1	0.2	9.758529653	9.556272512
500	0.3	0.1	0.4	10.36875801	10.24985438
500	0.3	0.1	0	15.49677895	15.94379185
500	0.3	0.3	0.2	9.914454053	9.81829832
500	0.3	0.3	0.4	9.899127913	9.749296178
500	0.3	0.3	0	15.654139	15.25102854

*Tabela 2. Análise da variação dos parâmetros para 100 execuções*

Nº de execuções	População	Nº de gerações	Prob. de crossover	Prob. de mutação	Elitismo	SR GA	SR ME	MBF GA	MBF ME	AES GA	AES ME	Tempo
100	50	1500	0.9	0.001	0.2	0%	2%	11.22	10.32745	0	98920	08:22:16
100	50	1500	0.1	0.001	0.2	1%	1%	11.61	11.33576	60029	72034.8	08:25:11
100	100	1500	0.1	0.001	0.2	14%	19%	11.03	11.02371	120029	144034.8	18:25:29
100	100	1500	0.3	0.001	0.2	35%	45%	9.392	9.229517	120029	144034.8	14:07:19
100	100	1500	0.5	0.001	0.2	15%	36%	10.00	9.690392	120029	144034.8	10:55:05
100	1000	1000	0.1	0.01	0.2	35%	36%	9.145	9.13209	800029	960034.8	09:26:17
100	80	1500	0.3	0.001	0.2	18%	32%	9.9914	9.777	96029	115234.8	06:29:29
100	60	1500	0.3	0.001	0.2	11%	19%	10.454	10.2318	72029	86434.8	04:44:25
100	80	1500	0.4	0.001	0.4	9%	29%	10.1697	9.8302	60029	72034.8	02:55:55
100	500	1500	0.3	0.001	0.2	62%	67%	9.1820	9.09013	895565	1074679	20:55:30
100	50	1500	0.4	0.001	0.4	5%	19%	10.4888	10.16258	45029	54034.8	02:24:17