

Multi-strategies Boosted Mutative Crow Search Algorithm for Global Tasks: Cases of Continuous and Discrete Optimization

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Influence of The Two Mechanisms

Table 1 The results of mechanism comparison

	F1		F2		F3	
	Avg	Std	Avg	Std	Avg	Std
CCMSCSA	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00	0.0000E+00
CCCSA	2.8806E-08	1.2725E-08	2.8578E-03	2.1582E-03	2.4434E-02	4.5341E-02
CMSCSA	3.6581E-26	1.0454E-25	5.2623E-49	2.3853E-48	1.9409E-26	3.0814E-26
CSA	9.7250E-01	5.2789E-01	6.4028E-05	4.9271E-05	4.7287E-01	4.0824E-01
	F4		F5		F6	
	Avg	Std	Avg	Std	Avg	Std
CCMSCSA	6.1930E+02	2.6611E+02	6.1491E+02	2.7632E+00	8.2457E+02	1.2194E+01
CCCSA	3.6608E+02	6.1683E+01	6.1494E+02	2.9858E+00	8.0846E+02	6.7049E+00
CMSCSA	7.4787E+03	1.8148E+03	6.3068E+02	3.2167E+00	9.4593E+02	1.9226E+01
CSA	8.0335E+02	2.6674E+02	6.3102E+02	2.5908E+00	9.2782E+02	1.9246E+01
	F7		F8		F9	
	Avg	Std	Avg	Std	Avg	Std
CCMSCSA	1.3821E+03	1.8853E+02	1.4003E+03	3.5453E-02	1.6108E+03	8.3725E-01
CCCSA	1.1659E+03	1.5468E+02	1.4003E+03	5.1357E-02	1.6105E+03	5.6823E-01
CMSCSA	4.5238E+03	4.5758E+02	1.4003E+03	9.2745E-02	1.6122E+03	4.0029E-01
CSA	4.4917E+03	5.6930E+02	1.4003E+03	1.0751E-01	1.6123E+03	4.7474E-01
	F10		F11		F12	
	Avg	Std	Avg	Std	Avg	Std
CCMSCSA	4.3641E+03	8.5957E+03	2.5478E+03	4.7335E+02	2.5000E+03	0.0000E+00
CCCSA	2.5604E+03	1.3195E+03	2.2960E+03	3.2265E+02	2.6153E+03	1.1222E-02
CMSCSA	2.8125E+03	1.2491E+03	3.6301E+03	1.5852E+03	2.5000E+03	0.0000E+00
CSA	2.1538E+03	2.3637E+02	2.4102E+03	9.4304E+01	2.6164E+03	7.8663E-01
	F13		F14		F15	
	Avg	Std	Avg	Std	Avg	Std
CCMSCSA	2.6000E+03	0.0000E+00	3.5670E+03	1.2183E+03	5.2187E+03	4.4910E+03
CCCSA	2.6140E+03	1.1442E+01	4.3433E+03	5.5308E+02	6.0434E+03	1.3105E+03
CMSCSA	2.6000E+03	0.0000E+00	7.0639E+03	1.5253E+03	3.2000E+03	0.0000E+00
CSA	2.6148E+03	1.1738E+01	8.0533E+06	2.3605E+07	1.8960E+04	3.0822E+04
Overall Rank						
	Rank	+/-/-	AVG			
CCMSCSA	1	~	1.7333			
CCCSA	2	7/4/4	2.0667			
CMSCSA	3	10/4/1	2.7333			
CSA	4	12/2/1	3.3333			