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1 "E:\1 \0000\3 \0000\1 \0000\1 \0000\1 \0000\1_LW_0000\2\6 \0000\2 python code\01_My_Python_Code\Scripts\python.
  exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=16721
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\1 \0000\3 \0000\1 \0000\1 \0000\1 \0000\1_LW_0000\2\6 \0000\2 python code\
  01_My_Python_Code', 'E:/1 \0000\3 \0000\1 \0000\1 \0000\1 \0000\1_LW_0000\2\6 \0000\2 python code/
  01_My_Python_Code'])
5
6 PyDev console: starting.
7
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9 >>> runfile('E:/1 \0000\3 \0000\1 \0000\1 \0000\1 \0000\1_LW_0000\2\6 \0000\2 python code\01_My_Python_Code/
  main_BACASP_official_ENSGA-II.py', wdir='E:/1 \0000\3 \0000\1 \0000\1 \0000\1 \0000\1_LW_0000\2\6 \0000\2
  python code\01_My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_8_4_standerd_test.xlsx optimization process solved by ENSGA-II algorithm.
14
15 Start
16
17 Before iteration:
18   Read basic data
19   Parameter setting:
20     trail = 58
21     Pop_size = 30
22     Tolerance_iteration_unchanged_number = 10
23     Chrom_size = 24
24     Iter_num_GA = 300
25     Select_rate = 0.85
26     Crossover_rate = 0.95
27     Mutation rate = 0.95
28     Mu_oper_type = 1
29     vessel_move_way = 2
30     coefficient for Obj1= 1.9
31     coefficient for Obj2= 0.10000000000000009
32     gen = 0
33
34 Iteration begin:
35 Beging the No. 0 iteration:
36   obj[0] = 25.70   temp_best_value_gen = 25.70
37   The No. 0 iteration is finished!
38
39 Beging the No. 1 iteration:
40   obj[gen-1] = 25.70   temp_best_value_gen = 25.70
41   No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 1
42   solution chromosome =
43     first level: [ [ 2.5  8.5 15.5 22.  26.  4.5  1.5  3.5]
44     second level: [ 4.  4.  6.  3.  1.  0.  7.  2.]
45     third level: [ 2.  6.  3.  3.  8.  5.  2.  4.] ]
46   The No. 1 iteration is finished!
47
48 Beging the No. 2 iteration:
49   obj[gen-1] = 25.70   temp_best_value_gen = 25.70
50   No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 2
51   solution chromosome =
52     first level: [ [ 2.5  8.5 15.5 22.  26.  4.5  1.5  3.5]
53     second level: [ 4.  4.  6.  3.  1.  0.  7.  2.]
54     third level: [ 2.  6.  3.  3.  8.  5.  2.  4.] ]
55   The No. 2 iteration is finished!
56
57 Beging the No. 3 iteration:
58   obj[gen-1] = 25.70   temp_best_value_gen = 25.70
59   No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 3
60   solution chromosome =
61     first level: [ [ 2.5  8.5 15.5 22.  26.  4.5  1.5  3.5]
62     second level: [ 4.  4.  6.  3.  1.  0.  7.  2.]
63     third level: [ 2.  6.  3.  3.  8.  5.  2.  4.] ]
64   The No. 3 iteration is finished!
65
66 Beging the No. 4 iteration:
67   obj[gen-1] = 25.70   temp_best_value_gen = 25.70
68   No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 4
69   solution chromosome =
70     first level: [ [ 2.5  8.5 15.5 22.  26.  4.5  1.5  3.5]
71     second level: [ 4.  4.  6.  3.  1.  0.  7.  2.]
72     third level: [ 2.  6.  3.  3.  8.  5.  2.  4.] ]
73   The No. 4 iteration is finished!
74
75 Beging the No. 5 iteration:
76   obj[gen-1] = 25.70   temp_best_value_gen = 25.70
77   No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 5
78   solution chromosome =
79     first level: [ [ 2.5  8.5 15.5 22.  26.  4.5  1.5  3.5]

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80     second level: [4. 4. 6. 3. 1. 0. 7. 2.]
81     third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
82     The No. 5 iteration is finished!
83
84     Beging the No. 6 iteration:
85     obj[gen-1] = 25.70 temp_best_value_gen = 25.70
86     No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 6
87     solution chromosome =
88     first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
89     second level: [4. 4. 6. 3. 1. 0. 7. 2.]
90     third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
91     The No. 6 iteration is finished!
92
93     Beging the No. 7 iteration:
94     obj[gen-1] = 25.70 temp_best_value_gen = 25.70
95     No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 7
96     solution chromosome =
97     first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
98     second level: [4. 4. 6. 3. 1. 0. 7. 2.]
99     third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
100    The No. 7 iteration is finished!
101
102    Beging the No. 8 iteration:
103    obj[gen-1] = 25.70 temp_best_value_gen = 25.70
104    No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 8
105    solution chromosome =
106    first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
107    second level: [4. 4. 6. 3. 1. 0. 7. 2.]
108    third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
109    The No. 8 iteration is finished!
110
111    Beging the No. 9 iteration:
112    obj[gen-1] = 25.70 temp_best_value_gen = 25.70
113    No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 9
114    solution chromosome =
115    first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
116    second level: [4. 4. 6. 3. 1. 0. 7. 2.]
117    third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
118    The No. 9 iteration is finished!
119
120    Beging the No. 10 iteration:
121    obj[gen-1] = 25.70 temp_best_value_gen = 25.70
122    No, maintain solution and obj[gen] = 25.70 , and the tolerance_counter = 10
123    solution chromosome =
124    first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
125    second level: [4. 4. 6. 3. 1. 0. 7. 2.]
126    third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
127    The No. 10 iteration is finished!
128
129
130 -----
131 The iteration is terminated and then vizulize the solution:
132 solution chromosome =
133 first level: [ [ 2.5 8.5 15.5 22. 26. 4.5 1.5 3.5]
134 second level: [4. 4. 6. 3. 1. 0. 7. 2.]
135 third level: [2. 6. 3. 3. 8. 5. 2. 4.] ]
136 Objective function values and some other indicators:
137 Obj0 = 10.00 Obj1 = 67.00 Obj0 + Obj1 = 77.00
138 Total movement of crane: 40.00
139 Total waiting time in berth position: 27.00
140 Total index of q during berthing: 312.00
141 Specific arrangement for each vessel:
142 V_id: 0 li: 5.0 xi: 2.5 bow of i: 0.0 tail of i: 5.0 gama_i0: 4.0 gama_i1: 7.0
143 duration_time_i: 3.0 demand_i: 100.0 work load_i: 100.0 work load gap_i: 0
144 V_id: 1 li: 7.0 xi: 8.5 bow of i: 5.0 tail of i: 12.0 gama_i0: 4.0 gama_i1: 5.0
145 duration_time_i: 1.0 demand_i: 100.0 work load_i: 100.0 work load gap_i: 0
146 V_id: 2 li: 7.0 xi: 15.5 bow of i: 12.0 tail of i: 19.0 gama_i0: 6.0 gama_i1: 9
147 duration_time_i: 3.0 demand_i: 140.0 work load_i: 140.0 work load gap_i: 0
148 V_id: 3 li: 6.0 xi: 22.0 bow of i: 19.0 tail of i: 25.0 gama_i0: 3.0 gama_i1: 4
149 duration_time_i: 1.0 demand_i: 60.0 work load_i: 60.0 work load gap_i: 0
150 V_id: 4 li: 8.0 xi: 26.0 bow of i: 22.0 tail of i: 30.0 gama_i0: 1.0 gama_i1: 2
151 duration_time_i: 1.0 demand_i: 100.0 work load_i: 100.0 work load gap_i: 0
152 V_id: 5 li: 9.0 xi: 4.5 bow of i: 0.0 tail of i: 9.0 gama_i0: 0.0 gama_i1: 2.0
153 duration_time_i: 2.0 demand_i: 160.0 work load_i: 160.0 work load gap_i: 0
154 V_id: 6 li: 3.0 xi: 1.5 bow of i: 0.0 tail of i: 3.0 gama_i0: 7.0 gama_i1: 11.0
155 duration_time_i: 4.0 demand_i: 140.0 work load_i: 140.0 work load gap_i: 0
156 V_id: 7 li: 7.0 xi: 3.5 bow of i: 0.0 tail of i: 7.0 gama_i0: 2.0 gama_i1: 4.0
157 duration_time_i: 2.0 demand_i: 140.0 work load_i: 140.0 work load gap_i: 0
158
159 Algorithm finished and the total CPU time: 921 s
160 End
161

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