

```

1 "E:\1 3 1\1 1\1 1\1_1\1_1_1_LW_2\6 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=53625
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\1 3 1\1 1\1_1\1_1_1_LW_2\6 python code\01_My_Python_Code\main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1 3 1/1 1_1_1_LW_2\6 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 3 1/1 1_1_1_LW_2\6 python code\01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1 3 1/1 1_1_1_LW_2\6 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_6_1_standerd_test.xlsx optimization process.
14
15 Start
16   Read basic data
17     V = 6
18     T = 36
19     Q = 23
20     L = 30
21   PSO parameter setting:
22     Trail = 15
23     maxIter_num = 40
24     W_inertia = 0.5
25     oder_type_num = 15
26     c1 = 2.0
27     c2 = 2.0
28     r1 = 0.817363055312917
29     r2 = 0.817363055312917
30 Begin iteration:
31
32 iter = 0
33   cord_individual_obj[individual_i, :] = [ 0. 3. 156. 159.]
34   cord_individual_obj[individual_i, :] = [ 1. 3. 164. 167.]
35   cord_individual_obj[individual_i, :] = [ 2. 3. 100. 103.]
36   cord_individual_obj[individual_i, :] = [ 3. 3. 132. 135.]
37   cord_individual_obj[individual_i, :] = [ 4. 3. 72. 75.]
38   cord_individual_obj[individual_i, :] = [ 5. 3. 126. 129.]
39   cord_individual_obj[individual_i, :] = [ 6. 3. 140. 143.]
40   cord_individual_obj[individual_i, :] = [ 7. 3. 118. 121.]
41   cord_individual_obj[individual_i, :] = [ 8. 3. 124. 127.]
42   cord_individual_obj[individual_i, :] = [ 9. 3. 76. 79.]
43   cord_individual_obj[individual_i, :] = [ 10. 3. 112. 115.]
44   cord_individual_obj[individual_i, :] = [ 11. 3. 108. 111.]
45   cord_individual_obj[individual_i, :] = [ 12. 3. 90. 93.]
46   cord_individual_obj[individual_i, :] = [ 13. 3. 130. 133.]
47   cord_individual_obj[individual_i, :] = [ 14. 3. 114. 117.]
48
49 min(cord_individual_obj[:, 3]) = 75.0
50 historl_G_best_iter[iter, 3] = 75.0
51 Begin iteration:
52
53 iter = 1
54   cord_individual_obj[individual_i, :] = [ 0. 4. 30. 34.]
55   cord_individual_obj[individual_i, :] = [ 1. 3. 72. 75.]
56   cord_individual_obj[individual_i, :] = [ 2. 4. 66. 70.]
57   cord_individual_obj[individual_i, :] = [ 3. 3. 36. 39.]
58   cord_individual_obj[individual_i, :] = [ 4. 4. 36. 40.]
59   cord_individual_obj[individual_i, :] = [ 5. 4. 48. 52.]
60   cord_individual_obj[individual_i, :] = [ 6. 4. 100. 104.]
61   cord_individual_obj[individual_i, :] = [ 7. 4. 48. 52.]
62   cord_individual_obj[individual_i, :] = [ 8. 4. 58. 62.]
63   cord_individual_obj[individual_i, :] = [ 9. 4. 76. 80.]
64   cord_individual_obj[individual_i, :] = [ 10. 4. 56. 60.]
65   cord_individual_obj[individual_i, :] = [ 11. 4. 56. 60.]
66   cord_individual_obj[individual_i, :] = [ 12. 4. 40. 44.]
67   cord_individual_obj[individual_i, :] = [ 13. 4. 56. 60.]
68   cord_individual_obj[individual_i, :] = [ 14. 4. 78. 82.]
69
70 min(cord_individual_obj[:, 3]) = 34.0
71 historl_G_best_iter[iter, 3] = 34.0
72 Begin iteration:
73
74 iter = 2
75   cord_individual_obj[individual_i, :] = [ 0. 6. 8. 14.]
76   cord_individual_obj[individual_i, :] = [ 1. 6. 8. 14.]
77   cord_individual_obj[individual_i, :] = [ 2. 6. 8. 14.]
78   cord_individual_obj[individual_i, :] = [ 3. 6. 8. 14.]
79   cord_individual_obj[individual_i, :] = [ 4. 6. 8. 14.]

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80  cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
81  cord_individual_obj[indivial_i,:] = [ 6. 4. 30. 34.]
82  cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
83  cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
84  cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
85  cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
86  cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
87  cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
88  cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
89  cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
90
91  min(cord_individual_obj[:,3]) = 14.0
92  historl_G_best_iter[iter,3] = 14.0
93 Begin iteration:
94
95 iter = 3
96  cord_individual_obj[indivial_i,:] = [ 0. 3. 140. 143.]
97  cord_individual_obj[indivial_i,:] = [ 1. 5. 84. 89.]
98  cord_individual_obj[indivial_i,:] = [ 2. 5. 72. 77.]
99  cord_individual_obj[indivial_i,:] = [ 3. 6. 114. 120.]
100  cord_individual_obj[indivial_i,:] = [ 4. 6. 36. 42.]
101  cord_individual_obj[indivial_i,:] = [ 5. 5. 40. 45.]
102  cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
103  cord_individual_obj[indivial_i,:] = [ 7. 3. 28. 31.]
104  cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
105  cord_individual_obj[indivial_i,:] = [ 9. 5. 32. 37.]
106  cord_individual_obj[indivial_i,:] = [10. 5. 72. 77.]
107  cord_individual_obj[indivial_i,:] = [11. 5. 68. 73.]
108  cord_individual_obj[indivial_i,:] = [12. 4. 24. 28.]
109  cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
110  cord_individual_obj[indivial_i,:] = [14. 3. 64. 67.]
111
112  min(cord_individual_obj[:,3]) = 14.0
113  historl_G_best_iter[iter,3] = 14.0
114 Begin iteration:
115
116 iter = 4
117  cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
118  cord_individual_obj[indivial_i,:] = [ 1. 5. 96. 101.]
119  cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
120  cord_individual_obj[indivial_i,:] = [ 3. 6. 44. 50.]
121  cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
122  cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
123  cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
124  cord_individual_obj[indivial_i,:] = [ 7. 3. 88. 91.]
125  cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
126  cord_individual_obj[indivial_i,:] = [ 9. 6. 12. 18.]
127  cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
128  cord_individual_obj[indivial_i,:] = [11. 6. 12. 18.]
129  cord_individual_obj[indivial_i,:] = [12. 4. 152. 156.]
130  cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
131  cord_individual_obj[indivial_i,:] = [14. 3. 54. 57.]
132
133  min(cord_individual_obj[:,3]) = 14.0
134  historl_G_best_iter[iter,3] = 14.0
135 Begin iteration:
136
137 iter = 5
138  cord_individual_obj[indivial_i,:] = [ 0. 3. 68. 71.]
139  cord_individual_obj[indivial_i,:] = [ 1. 5. 26. 31.]
140  cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
141  cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
142  cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
143  cord_individual_obj[indivial_i,:] = [ 5. 5. 118. 123.]
144  cord_individual_obj[indivial_i,:] = [ 6. 6. 16. 22.]
145  cord_individual_obj[indivial_i,:] = [ 7. 6. 16. 22.]
146  cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
147  cord_individual_obj[indivial_i,:] = [ 9. 5. 124. 129.]
148  cord_individual_obj[indivial_i,:] = [10. 5. 24. 29.]
149  cord_individual_obj[indivial_i,:] = [11. 5. 74. 79.]
150  cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
151  cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
152  cord_individual_obj[indivial_i,:] = [14. 5. 12. 17.]
153
154  min(cord_individual_obj[:,3]) = 14.0
155  historl_G_best_iter[iter,3] = 14.0
156 Begin iteration:
157
158 iter = 6
159  cord_individual_obj[indivial_i,:] = [ 0. 4. 76. 80.]
160  cord_individual_obj[indivial_i,:] = [ 1. 5. 88. 93.]
161  cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
162  cord_individual_obj[indivial_i,:] = [ 3. 6. 48. 54.]
163  cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]

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164 cord_individual_obj[indivial_i,:] = [ 5. 5. 54. 59.]
165 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
166 cord_individual_obj[indivial_i,:] = [ 7. 4. 54. 58.]
167 cord_individual_obj[indivial_i,:] = [ 8. 6. 26. 32.]
168 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
169 cord_individual_obj[indivial_i,:] = [10. 5. 84. 89.]
170 cord_individual_obj[indivial_i,:] = [11. 5. 68. 73.]
171 cord_individual_obj[indivial_i,:] = [12. 3. 148. 151.]
172 cord_individual_obj[indivial_i,:] = [13. 6. 48. 54.]
173 cord_individual_obj[indivial_i,:] = [14. 5. 62. 67.]
174
175 min(cord_individual_obj[:,3]) = 14.0
176 historl_G_best_iter[iter,3] = 14.0
177 Begin iteration:
178
179 iter = 7
180 cord_individual_obj[indivial_i,:] = [ 0. 5. 156. 161.]
181 cord_individual_obj[indivial_i,:] = [ 1. 5. 84. 89.]
182 cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
183 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
184 cord_individual_obj[indivial_i,:] = [ 4. 6. 48. 54.]
185 cord_individual_obj[indivial_i,:] = [ 5. 5. 38. 43.]
186 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
187 cord_individual_obj[indivial_i,:] = [ 7. 3. 140. 143.]
188 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
189 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
190 cord_individual_obj[indivial_i,:] = [10. 6. 48. 54.]
191 cord_individual_obj[indivial_i,:] = [11. 5. 46. 51.]
192 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
193 cord_individual_obj[indivial_i,:] = [13. 6. 38. 44.]
194 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
195
196 min(cord_individual_obj[:,3]) = 14.0
197 historl_G_best_iter[iter,3] = 14.0
198 Begin iteration:
199
200 iter = 8
201 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
202 cord_individual_obj[indivial_i,:] = [ 1. 6. 28. 34.]
203 cord_individual_obj[indivial_i,:] = [ 2. 6. 48. 54.]
204 cord_individual_obj[indivial_i,:] = [ 3. 6. 60. 66.]
205 cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]
206 cord_individual_obj[indivial_i,:] = [ 5. 6. 52. 58.]
207 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
208 cord_individual_obj[indivial_i,:] = [ 7. 4. 74. 78.]
209 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
210 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
211 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
212 cord_individual_obj[indivial_i,:] = [11. 6. 48. 54.]
213 cord_individual_obj[indivial_i,:] = [12. 3. 134. 137.]
214 cord_individual_obj[indivial_i,:] = [13. 6. 28. 34.]
215 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
216
217 min(cord_individual_obj[:,3]) = 14.0
218 historl_G_best_iter[iter,3] = 14.0
219 Begin iteration:
220
221 iter = 9
222 cord_individual_obj[indivial_i,:] = [ 0. 4. 98. 102.]
223 cord_individual_obj[indivial_i,:] = [ 1. 5. 104. 109.]
224 cord_individual_obj[indivial_i,:] = [ 2. 5. 64. 69.]
225 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
226 cord_individual_obj[indivial_i,:] = [ 4. 6. 28. 34.]
227 cord_individual_obj[indivial_i,:] = [ 5. 5. 52. 57.]
228 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
229 cord_individual_obj[indivial_i,:] = [ 7. 4. 28. 32.]
230 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
231 cord_individual_obj[indivial_i,:] = [ 9. 6. 28. 34.]
232 cord_individual_obj[indivial_i,:] = [10. 5. 78. 83.]
233 cord_individual_obj[indivial_i,:] = [11. 5. 56. 61.]
234 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
235 cord_individual_obj[indivial_i,:] = [13. 6. 48. 54.]
236 cord_individual_obj[indivial_i,:] = [14. 4. 66. 70.]
237
238 min(cord_individual_obj[:,3]) = 14.0
239 historl_G_best_iter[iter,3] = 14.0
240 Begin iteration:
241
242 iter = 10
243 cord_individual_obj[indivial_i,:] = [ 0. 6. 60. 66.]
244 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
245 cord_individual_obj[indivial_i,:] = [ 2. 6. 52. 58.]
246 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
247 cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]

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248 cord_individual_obj[indivial_i,:] = [ 5. 6. 38. 44.]
249 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
250 cord_individual_obj[indivial_i,:] = [ 7. 4. 74. 78.]
251 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
252 cord_individual_obj[indivial_i,:] = [ 9. 5. 38. 43.]
253 cord_individual_obj[indivial_i,:] = [10. 6. 28. 34.]
254 cord_individual_obj[indivial_i,:] = [11. 5. 66. 71.]
255 cord_individual_obj[indivial_i,:] = [12. 3. 112. 115.]
256 cord_individual_obj[indivial_i,:] = [13. 6. 52. 58.]
257 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
258
259 min(cord_individual_obj[:,3]) = 14.0
260 historl_G_best_iter[iter,3] = 14.0
261 Begin iteration:
262
263 iter = 11
264 cord_individual_obj[indivial_i,:] = [ 0. 5. 36. 41.]
265 cord_individual_obj[indivial_i,:] = [ 1. 5. 92. 97.]
266 cord_individual_obj[indivial_i,:] = [ 2. 5. 20. 25.]
267 cord_individual_obj[indivial_i,:] = [ 3. 6. 16. 22.]
268 cord_individual_obj[indivial_i,:] = [ 4. 6. 14. 20.]
269 cord_individual_obj[indivial_i,:] = [ 5. 5. 70. 75.]
270 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
271 cord_individual_obj[indivial_i,:] = [ 7. 5. 22. 27.]
272 cord_individual_obj[indivial_i,:] = [ 8. 6. 14. 20.]
273 cord_individual_obj[indivial_i,:] = [ 9. 5. 36. 41.]
274 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
275 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
276 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
277 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
278 cord_individual_obj[indivial_i,:] = [14. 4. 68. 72.]
279
280 min(cord_individual_obj[:,3]) = 14.0
281 historl_G_best_iter[iter,3] = 14.0
282 Begin iteration:
283
284 iter = 12
285 cord_individual_obj[indivial_i,:] = [ 0. 6. 52. 58.]
286 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
287 cord_individual_obj[indivial_i,:] = [ 2. 6. 52. 58.]
288 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
289 cord_individual_obj[indivial_i,:] = [ 4. 6. 52. 58.]
290 cord_individual_obj[indivial_i,:] = [ 5. 6. 38. 44.]
291 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
292 cord_individual_obj[indivial_i,:] = [ 7. 4. 58. 62.]
293 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
294 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
295 cord_individual_obj[indivial_i,:] = [10. 5. 104. 109.]
296 cord_individual_obj[indivial_i,:] = [11. 5. 48. 53.]
297 cord_individual_obj[indivial_i,:] = [12. 3. 92. 95.]
298 cord_individual_obj[indivial_i,:] = [13. 6. 80. 86.]
299 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
300
301 min(cord_individual_obj[:,3]) = 14.0
302 historl_G_best_iter[iter,3] = 14.0
303 Begin iteration:
304
305 iter = 13
306 cord_individual_obj[indivial_i,:] = [ 0. 4. 118. 122.]
307 cord_individual_obj[indivial_i,:] = [ 1. 5. 52. 57.]
308 cord_individual_obj[indivial_i,:] = [ 2. 5. 88. 93.]
309 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
310 cord_individual_obj[indivial_i,:] = [ 4. 6. 80. 86.]
311 cord_individual_obj[indivial_i,:] = [ 5. 5. 28. 33.]
312 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
313 cord_individual_obj[indivial_i,:] = [ 7. 5. 90. 95.]
314 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
315 cord_individual_obj[indivial_i,:] = [ 9. 5. 38. 43.]
316 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
317 cord_individual_obj[indivial_i,:] = [11. 5. 76. 81.]
318 cord_individual_obj[indivial_i,:] = [12. 4. 28. 32.]
319 cord_individual_obj[indivial_i,:] = [13. 6. 38. 44.]
320 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
321
322 min(cord_individual_obj[:,3]) = 14.0
323 historl_G_best_iter[iter,3] = 14.0
324 Begin iteration:
325
326 iter = 14
327 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
328 cord_individual_obj[indivial_i,:] = [ 1. 5. 116. 121.]
329 cord_individual_obj[indivial_i,:] = [ 2. 5. 68. 73.]
330 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
331 cord_individual_obj[indivial_i,:] = [ 4. 6. 80. 86.]

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332     cord_individual_obj[indivial_i,:] = [ 5. 5. 78. 83.]
333     cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
334     cord_individual_obj[indivial_i,:] = [ 7. 4. 58. 62.]
335     cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
336     cord_individual_obj[indivial_i,:] = [ 9. 6. 28. 34.]
337     cord_individual_obj[indivial_i,:] = [10. 5. 28. 33.]
338     cord_individual_obj[indivial_i,:] = [11. 5. 56. 61.]
339     cord_individual_obj[indivial_i,:] = [12. 4. 46. 50.]
340     cord_individual_obj[indivial_i,:] = [13. 6. 38. 44.]
341     cord_individual_obj[indivial_i,:] = [14. 4. 92. 96.]
342
343 min(cord_individual_obj[:,3]) = 14.0
344 historl_G_best_iter[iter,3] = 14.0
345 Begin iteration:
346
347 iter = 15
348     cord_individual_obj[indivial_i,:] = [ 0. 5. 38. 43.]
349     cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
350     cord_individual_obj[indivial_i,:] = [ 2. 6. 52. 58.]
351     cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
352     cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]
353     cord_individual_obj[indivial_i,:] = [ 5. 5. 68. 73.]
354     cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
355     cord_individual_obj[indivial_i,:] = [ 7. 6. 52. 58.]
356     cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
357     cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
358     cord_individual_obj[indivial_i,:] = [10. 5. 140. 145.]
359     cord_individual_obj[indivial_i,:] = [11. 5. 38. 43.]
360     cord_individual_obj[indivial_i,:] = [12. 6. 80. 86.]
361     cord_individual_obj[indivial_i,:] = [13. 6. 48. 54.]
362     cord_individual_obj[indivial_i,:] = [14. 5. 52. 57.]
363
364 min(cord_individual_obj[:,3]) = 14.0
365 historl_G_best_iter[iter,3] = 14.0
366 Begin iteration:
367
368 iter = 16
369     cord_individual_obj[indivial_i,:] = [ 0. 4. 68. 72.]
370     cord_individual_obj[indivial_i,:] = [ 1. 5. 28. 33.]
371     cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
372     cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
373     cord_individual_obj[indivial_i,:] = [ 4. 6. 80. 86.]
374     cord_individual_obj[indivial_i,:] = [ 5. 5. 52. 57.]
375     cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
376     cord_individual_obj[indivial_i,:] = [ 7. 5. 58. 63.]
377     cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
378     cord_individual_obj[indivial_i,:] = [ 9. 5. 52. 57.]
379     cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
380     cord_individual_obj[indivial_i,:] = [11. 5. 52. 57.]
381     cord_individual_obj[indivial_i,:] = [12. 6. 48. 54.]
382     cord_individual_obj[indivial_i,:] = [13. 6. 38. 44.]
383     cord_individual_obj[indivial_i,:] = [14. 4. 54. 58.]
384
385 min(cord_individual_obj[:,3]) = 14.0
386 historl_G_best_iter[iter,3] = 14.0
387 Begin iteration:
388
389 iter = 17
390     cord_individual_obj[indivial_i,:] = [ 0. 5. 98. 103.]
391     cord_individual_obj[indivial_i,:] = [ 1. 5. 72. 77.]
392     cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
393     cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
394     cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
395     cord_individual_obj[indivial_i,:] = [ 5. 6. 52. 58.]
396     cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
397     cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
398     cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
399     cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
400     cord_individual_obj[indivial_i,:] = [10. 5. 104. 109.]
401     cord_individual_obj[indivial_i,:] = [11. 5. 38. 43.]
402     cord_individual_obj[indivial_i,:] = [12. 3. 56. 59.]
403     cord_individual_obj[indivial_i,:] = [13. 6. 28. 34.]
404     cord_individual_obj[indivial_i,:] = [14. 4. 28. 32.]
405
406 min(cord_individual_obj[:,3]) = 14.0
407 historl_G_best_iter[iter,3] = 14.0
408 Begin iteration:
409
410 iter = 18
411     cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
412     cord_individual_obj[indivial_i,:] = [ 1. 6. 38. 44.]
413     cord_individual_obj[indivial_i,:] = [ 2. 6. 28. 34.]
414     cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
415     cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]

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416 cord_individual_obj[indivial_i,:] = [ 5. 5. 108. 113.]
417 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
418 cord_individual_obj[indivial_i,:] = [ 7. 4. 118. 122.]
419 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
420 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
421 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
422 cord_individual_obj[indivial_i,:] = [11. 5. 86. 91.]
423 cord_individual_obj[indivial_i,:] = [12. 3. 124. 127.]
424 cord_individual_obj[indivial_i,:] = [13. 6. 52. 58.]
425 cord_individual_obj[indivial_i,:] = [14. 4. 92. 96.]
426
427 min(cord_individual_obj[:,3]) = 14.0
428 historl_G_best_iter[iter,3] = 14.0
429 Begin iteration:
430
431 iter = 19
432 cord_individual_obj[indivial_i,:] = [ 0. 4. 110. 114.]
433 cord_individual_obj[indivial_i,:] = [ 1. 5. 46. 51.]
434 cord_individual_obj[indivial_i,:] = [ 2. 6. 48. 54.]
435 cord_individual_obj[indivial_i,:] = [ 3. 6. 52. 58.]
436 cord_individual_obj[indivial_i,:] = [ 4. 6. 38. 44.]
437 cord_individual_obj[indivial_i,:] = [ 5. 5. 52. 57.]
438 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
439 cord_individual_obj[indivial_i,:] = [ 7. 4. 96. 100.]
440 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
441 cord_individual_obj[indivial_i,:] = [ 9. 5. 52. 57.]
442 cord_individual_obj[indivial_i,:] = [10. 5. 46. 51.]
443 cord_individual_obj[indivial_i,:] = [11. 6. 88. 94.]
444 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
445 cord_individual_obj[indivial_i,:] = [13. 6. 60. 66.]
446 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
447
448 min(cord_individual_obj[:,3]) = 14.0
449 historl_G_best_iter[iter,3] = 14.0
450 Begin iteration:
451
452 iter = 20
453 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
454 cord_individual_obj[indivial_i,:] = [ 1. 5. 58. 63.]
455 cord_individual_obj[indivial_i,:] = [ 2. 5. 32. 37.]
456 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
457 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
458 cord_individual_obj[indivial_i,:] = [ 5. 5. 60. 65.]
459 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
460 cord_individual_obj[indivial_i,:] = [ 7. 5. 26. 31.]
461 cord_individual_obj[indivial_i,:] = [ 8. 6. 20. 26.]
462 cord_individual_obj[indivial_i,:] = [ 9. 5. 32. 37.]
463 cord_individual_obj[indivial_i,:] = [10. 5. 58. 63.]
464 cord_individual_obj[indivial_i,:] = [11. 5. 54. 59.]
465 cord_individual_obj[indivial_i,:] = [12. 4. 58. 62.]
466 cord_individual_obj[indivial_i,:] = [13. 6. 24. 30.]
467 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
468
469 min(cord_individual_obj[:,3]) = 14.0
470 historl_G_best_iter[iter,3] = 14.0
471 Begin iteration:
472
473 iter = 21
474 cord_individual_obj[indivial_i,:] = [ 0. 5. 68. 73.]
475 cord_individual_obj[indivial_i,:] = [ 1. 6. 48. 54.]
476 cord_individual_obj[indivial_i,:] = [ 2. 6. 32. 38.]
477 cord_individual_obj[indivial_i,:] = [ 3. 6. 60. 66.]
478 cord_individual_obj[indivial_i,:] = [ 4. 6. 52. 58.]
479 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
480 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
481 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
482 cord_individual_obj[indivial_i,:] = [ 8. 6. 30. 36.]
483 cord_individual_obj[indivial_i,:] = [ 9. 6. 16. 22.]
484 cord_individual_obj[indivial_i,:] = [10. 6. 36. 42.]
485 cord_individual_obj[indivial_i,:] = [11. 5. 16. 21.]
486 cord_individual_obj[indivial_i,:] = [12. 5. 96. 101.]
487 cord_individual_obj[indivial_i,:] = [13. 6. 52. 58.]
488 cord_individual_obj[indivial_i,:] = [14. 6. 50. 56.]
489
490 min(cord_individual_obj[:,3]) = 14.0
491 historl_G_best_iter[iter,3] = 14.0
492 Begin iteration:
493
494 iter = 22
495 cord_individual_obj[indivial_i,:] = [ 0. 6. 42. 48.]
496 cord_individual_obj[indivial_i,:] = [ 1. 5. 52. 57.]
497 cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
498 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
499 cord_individual_obj[indivial_i,:] = [ 4. 6. 28. 34.]

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500 cord_individual_obj[indivial_i,:] = [ 5. 5. 86. 91.]
501 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
502 cord_individual_obj[indivial_i,:] = [ 7. 6. 28. 34.]
503 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
504 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
505 cord_individual_obj[indivial_i,:] = [10. 5. 48. 53.]
506 cord_individual_obj[indivial_i,:] = [11. 6. 60. 66.]
507 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
508 cord_individual_obj[indivial_i,:] = [13. 6. 28. 34.]
509 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
510
511 min(cord_individual_obj[:,3]) = 14.0
512 historl_G_best_iter[iter,3] = 14.0
513 Begin iteration:
514
515 iter = 23
516 cord_individual_obj[indivial_i,:] = [ 0. 4. 66. 70.]
517 cord_individual_obj[indivial_i,:] = [ 1. 5. 38. 43.]
518 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
519 cord_individual_obj[indivial_i,:] = [ 3. 6. 52. 58.]
520 cord_individual_obj[indivial_i,:] = [ 4. 6. 48. 54.]
521 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
522 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
523 cord_individual_obj[indivial_i,:] = [ 7. 4. 106. 110.]
524 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
525 cord_individual_obj[indivial_i,:] = [ 9. 5. 38. 43.]
526 cord_individual_obj[indivial_i,:] = [10. 5. 78. 83.]
527 cord_individual_obj[indivial_i,:] = [11. 5. 46. 51.]
528 cord_individual_obj[indivial_i,:] = [12. 3. 82. 85.]
529 cord_individual_obj[indivial_i,:] = [13. 6. 60. 66.]
530 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
531
532 min(cord_individual_obj[:,3]) = 14.0
533 historl_G_best_iter[iter,3] = 14.0
534 Begin iteration:
535
536 iter = 24
537 cord_individual_obj[indivial_i,:] = [ 0. 6. 46. 52.]
538 cord_individual_obj[indivial_i,:] = [ 1. 6. 32. 38.]
539 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
540 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
541 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
542 cord_individual_obj[indivial_i,:] = [ 5. 5. 38. 43.]
543 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
544 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
545 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
546 cord_individual_obj[indivial_i,:] = [ 9. 5. 32. 37.]
547 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
548 cord_individual_obj[indivial_i,:] = [11. 5. 58. 63.]
549 cord_individual_obj[indivial_i,:] = [12. 5. 22. 27.]
550 cord_individual_obj[indivial_i,:] = [13. 6. 24. 30.]
551 cord_individual_obj[indivial_i,:] = [14. 4. 44. 48.]
552
553 min(cord_individual_obj[:,3]) = 14.0
554 historl_G_best_iter[iter,3] = 14.0
555 Begin iteration:
556
557 iter = 25
558 cord_individual_obj[indivial_i,:] = [ 0. 4. 118. 122.]
559 cord_individual_obj[indivial_i,:] = [ 1. 5. 122. 127.]
560 cord_individual_obj[indivial_i,:] = [ 2. 5. 48. 53.]
561 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
562 cord_individual_obj[indivial_i,:] = [ 4. 6. 24. 30.]
563 cord_individual_obj[indivial_i,:] = [ 5. 5. 108. 113.]
564 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
565 cord_individual_obj[indivial_i,:] = [ 7. 4. 28. 32.]
566 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
567 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
568 cord_individual_obj[indivial_i,:] = [10. 6. 38. 44.]
569 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
570 cord_individual_obj[indivial_i,:] = [12. 6. 48. 54.]
571 cord_individual_obj[indivial_i,:] = [13. 6. 24. 30.]
572 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
573
574 min(cord_individual_obj[:,3]) = 14.0
575 historl_G_best_iter[iter,3] = 14.0
576 Begin iteration:
577
578 iter = 26
579 cord_individual_obj[indivial_i,:] = [ 0. 6. 42. 48.]
580 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
581 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
582 cord_individual_obj[indivial_i,:] = [ 3. 6. 60. 66.]
583 cord_individual_obj[indivial_i,:] = [ 4. 6. 80. 86.]

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584 cord_individual_obj[indivial_i,:] = [ 5. 6. 28. 34.]
585 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
586 cord_individual_obj[indivial_i,:] = [ 7. 6. 28. 34.]
587 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
588 cord_individual_obj[indivial_i,:] = [ 9. 5. 38. 43.]
589 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
590 cord_individual_obj[indivial_i,:] = [11. 5. 104. 109.]
591 cord_individual_obj[indivial_i,:] = [12. 6. 80. 86.]
592 cord_individual_obj[indivial_i,:] = [13. 6. 28. 34.]
593 cord_individual_obj[indivial_i,:] = [14. 4. 44. 48.]
594
595 min(cord_individual_obj[:,3]) = 14.0
596 historl_G_best_iter[iter,3] = 14.0
597 Begin iteration:
598
599 iter = 27
600 cord_individual_obj[indivial_i,:] = [ 0. 6. 36. 42.]
601 cord_individual_obj[indivial_i,:] = [ 1. 5. 68. 73.]
602 cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
603 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
604 cord_individual_obj[indivial_i,:] = [ 4. 6. 20. 26.]
605 cord_individual_obj[indivial_i,:] = [ 5. 5. 88. 93.]
606 cord_individual_obj[indivial_i,:] = [ 6. 6. 24. 30.]
607 cord_individual_obj[indivial_i,:] = [ 7. 5. 44. 49.]
608 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
609 cord_individual_obj[indivial_i,:] = [ 9. 5. 32. 37.]
610 cord_individual_obj[indivial_i,:] = [10. 6. 20. 26.]
611 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
612 cord_individual_obj[indivial_i,:] = [12. 4. 122. 126.]
613 cord_individual_obj[indivial_i,:] = [13. 6. 24. 30.]
614 cord_individual_obj[indivial_i,:] = [14. 6. 16. 22.]
615
616 min(cord_individual_obj[:,3]) = 14.0
617 historl_G_best_iter[iter,3] = 14.0
618 Begin iteration:
619
620 iter = 28
621 cord_individual_obj[indivial_i,:] = [ 0. 5. 78. 83.]
622 cord_individual_obj[indivial_i,:] = [ 1. 5. 48. 53.]
623 cord_individual_obj[indivial_i,:] = [ 2. 6. 28. 34.]
624 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
625 cord_individual_obj[indivial_i,:] = [ 4. 6. 38. 44.]
626 cord_individual_obj[indivial_i,:] = [ 5. 5. 28. 33.]
627 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
628 cord_individual_obj[indivial_i,:] = [ 7. 5. 86. 91.]
629 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
630 cord_individual_obj[indivial_i,:] = [ 9. 6. 28. 34.]
631 cord_individual_obj[indivial_i,:] = [10. 5. 88. 93.]
632 cord_individual_obj[indivial_i,:] = [11. 6. 80. 86.]
633 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
634 cord_individual_obj[indivial_i,:] = [13. 6. 52. 58.]
635 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
636
637 min(cord_individual_obj[:,3]) = 14.0
638 historl_G_best_iter[iter,3] = 14.0
639 Begin iteration:
640
641 iter = 29
642 cord_individual_obj[indivial_i,:] = [ 0. 6. 70. 76.]
643 cord_individual_obj[indivial_i,:] = [ 1. 6. 52. 58.]
644 cord_individual_obj[indivial_i,:] = [ 2. 6. 48. 54.]
645 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
646 cord_individual_obj[indivial_i,:] = [ 4. 6. 28. 34.]
647 cord_individual_obj[indivial_i,:] = [ 5. 6. 28. 34.]
648 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
649 cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
650 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
651 cord_individual_obj[indivial_i,:] = [ 9. 5. 52. 57.]
652 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
653 cord_individual_obj[indivial_i,:] = [11. 5. 52. 57.]
654 cord_individual_obj[indivial_i,:] = [12. 3. 134. 137.]
655 cord_individual_obj[indivial_i,:] = [13. 6. 48. 54.]
656 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
657
658 min(cord_individual_obj[:,3]) = 14.0
659 historl_G_best_iter[iter,3] = 14.0
660 Begin iteration:
661
662 iter = 30
663 cord_individual_obj[indivial_i,:] = [ 0. 5. 68. 73.]
664 cord_individual_obj[indivial_i,:] = [ 1. 5. 58. 63.]
665 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
666 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
667 cord_individual_obj[indivial_i,:] = [ 4. 6. 38. 44.]

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668 cord_individual_obj[indivial_i,:] = [ 5. 5. 108. 113.]
669 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
670 cord_individual_obj[indivial_i,:] = [ 7. 4. 84. 88.]
671 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
672 cord_individual_obj[indivial_i,:] = [ 9. 5. 38. 43.]
673 cord_individual_obj[indivial_i,:] = [10. 5. 38. 43.]
674 cord_individual_obj[indivial_i,:] = [11. 6. 28. 34.]
675 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
676 cord_individual_obj[indivial_i,:] = [13. 6. 28. 34.]
677 cord_individual_obj[indivial_i,:] = [14. 4. 28. 32.]
678
679 min(cord_individual_obj[:,3]) = 14.0
680 historl_G_best_iter[iter,3] = 14.0
681 Begin iteration:
682
683 iter = 31
684 cord_individual_obj[indivial_i,:] = [ 0. 6. 28. 34.]
685 cord_individual_obj[indivial_i,:] = [ 1. 5. 58. 63.]
686 cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
687 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
688 cord_individual_obj[indivial_i,:] = [ 4. 6. 32. 38.]
689 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
690 cord_individual_obj[indivial_i,:] = [ 6. 6. 32. 38.]
691 cord_individual_obj[indivial_i,:] = [ 7. 6. 28. 34.]
692 cord_individual_obj[indivial_i,:] = [ 8. 6. 20. 26.]
693 cord_individual_obj[indivial_i,:] = [ 9. 6. 28. 34.]
694 cord_individual_obj[indivial_i,:] = [10. 5. 38. 43.]
695 cord_individual_obj[indivial_i,:] = [11. 5. 148. 153.]
696 cord_individual_obj[indivial_i,:] = [12. 4. 46. 50.]
697 cord_individual_obj[indivial_i,:] = [13. 6. 44. 50.]
698 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
699
700 min(cord_individual_obj[:,3]) = 14.0
701 historl_G_best_iter[iter,3] = 14.0
702 Begin iteration:
703
704 iter = 32
705 cord_individual_obj[indivial_i,:] = [ 0. 5. 108. 113.]
706 cord_individual_obj[indivial_i,:] = [ 1. 6. 36. 42.]
707 cord_individual_obj[indivial_i,:] = [ 2. 6. 28. 34.]
708 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
709 cord_individual_obj[indivial_i,:] = [ 4. 6. 20. 26.]
710 cord_individual_obj[indivial_i,:] = [ 5. 5. 58. 63.]
711 cord_individual_obj[indivial_i,:] = [ 6. 6. 32. 38.]
712 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
713 cord_individual_obj[indivial_i,:] = [ 8. 6. 24. 30.]
714 cord_individual_obj[indivial_i,:] = [ 9. 5. 32. 37.]
715 cord_individual_obj[indivial_i,:] = [10. 6. 44. 50.]
716 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
717 cord_individual_obj[indivial_i,:] = [12. 5. 26. 31.]
718 cord_individual_obj[indivial_i,:] = [13. 6. 56. 62.]
719 cord_individual_obj[indivial_i,:] = [14. 4. 60. 64.]
720
721 min(cord_individual_obj[:,3]) = 14.0
722 historl_G_best_iter[iter,3] = 14.0
723 Begin iteration:
724
725 iter = 33
726 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
727 cord_individual_obj[indivial_i,:] = [ 1. 5. 104. 109.]
728 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
729 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
730 cord_individual_obj[indivial_i,:] = [ 4. 6. 48. 54.]
731 cord_individual_obj[indivial_i,:] = [ 5. 5. 52. 57.]
732 cord_individual_obj[indivial_i,:] = [ 6. 6. 48. 54.]
733 cord_individual_obj[indivial_i,:] = [ 7. 4. 74. 78.]
734 cord_individual_obj[indivial_i,:] = [ 8. 6. 48. 54.]
735 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
736 cord_individual_obj[indivial_i,:] = [10. 6. 28. 34.]
737 cord_individual_obj[indivial_i,:] = [11. 5. 58. 63.]
738 cord_individual_obj[indivial_i,:] = [12. 3. 188. 191.]
739 cord_individual_obj[indivial_i,:] = [13. 6. 52. 58.]
740 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
741
742 min(cord_individual_obj[:,3]) = 14.0
743 historl_G_best_iter[iter,3] = 14.0
744 Begin iteration:
745
746 iter = 34
747 cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
748 cord_individual_obj[indivial_i,:] = [ 1. 6. 28. 34.]
749 cord_individual_obj[indivial_i,:] = [ 2. 6. 48. 54.]
750 cord_individual_obj[indivial_i,:] = [ 3. 6. 52. 58.]
751 cord_individual_obj[indivial_i,:] = [ 4. 6. 60. 66.]

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752     cord_individual_obj[indivial_i, :] = [ 5. 6. 52. 58.]
753     cord_individual_obj[indivial_i, :] = [ 6. 6. 28. 34.]
754     cord_individual_obj[indivial_i, :] = [ 7. 4. 46. 50.]
755     cord_individual_obj[indivial_i, :] = [ 8. 6. 48. 54.]
756     cord_individual_obj[indivial_i, :] = [ 9. 6. 28. 34.]
757     cord_individual_obj[indivial_i, :] = [10. 5. 60. 65.]
758     cord_individual_obj[indivial_i, :] = [11. 6. 48. 54.]
759     cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
760     cord_individual_obj[indivial_i, :] = [13. 6. 48. 54.]
761     cord_individual_obj[indivial_i, :] = [14. 6. 28. 34.]
762
763 min(cord_individual_obj[:, 3]) = 14.0
764 historl_G_best_iter[iter, 3] = 14.0
765 Begin iteration:
766
767 iter = 35
768     cord_individual_obj[indivial_i, :] = [ 0. 6. 42. 48.]
769     cord_individual_obj[indivial_i, :] = [ 1. 5. 28. 33.]
770     cord_individual_obj[indivial_i, :] = [ 2. 5. 28. 33.]
771     cord_individual_obj[indivial_i, :] = [ 3. 6. 28. 34.]
772     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
773     cord_individual_obj[indivial_i, :] = [ 5. 6. 28. 34.]
774     cord_individual_obj[indivial_i, :] = [ 6. 6. 48. 54.]
775     cord_individual_obj[indivial_i, :] = [ 7. 6. 28. 34.]
776     cord_individual_obj[indivial_i, :] = [ 8. 6. 28. 34.]
777     cord_individual_obj[indivial_i, :] = [ 9. 6. 28. 34.]
778     cord_individual_obj[indivial_i, :] = [10. 6. 52. 58.]
779     cord_individual_obj[indivial_i, :] = [11. 5. 78. 83.]
780     cord_individual_obj[indivial_i, :] = [12. 5. 78. 83.]
781     cord_individual_obj[indivial_i, :] = [13. 6. 28. 34.]
782     cord_individual_obj[indivial_i, :] = [14. 4. 46. 50.]
783
784 min(cord_individual_obj[:, 3]) = 14.0
785 historl_G_best_iter[iter, 3] = 14.0
786 Begin iteration:
787
788 iter = 36
789     cord_individual_obj[indivial_i, :] = [ 0. 6. 28. 34.]
790     cord_individual_obj[indivial_i, :] = [ 1. 5. 66. 71.]
791     cord_individual_obj[indivial_i, :] = [ 2. 5. 28. 33.]
792     cord_individual_obj[indivial_i, :] = [ 3. 6. 28. 34.]
793     cord_individual_obj[indivial_i, :] = [ 4. 6. 48. 54.]
794     cord_individual_obj[indivial_i, :] = [ 5. 5. 38. 43.]
795     cord_individual_obj[indivial_i, :] = [ 6. 6. 48. 54.]
796     cord_individual_obj[indivial_i, :] = [ 7. 4. 38. 42.]
797     cord_individual_obj[indivial_i, :] = [ 8. 6. 28. 34.]
798     cord_individual_obj[indivial_i, :] = [ 9. 5. 28. 33.]
799     cord_individual_obj[indivial_i, :] = [10. 5. 76. 81.]
800     cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
801     cord_individual_obj[indivial_i, :] = [12. 5. 78. 83.]
802     cord_individual_obj[indivial_i, :] = [13. 6. 60. 66.]
803     cord_individual_obj[indivial_i, :] = [14. 4. 58. 62.]
804
805 min(cord_individual_obj[:, 3]) = 14.0
806 historl_G_best_iter[iter, 3] = 14.0
807 Begin iteration:
808
809 iter = 37
810     cord_individual_obj[indivial_i, :] = [ 0. 5. 58. 63.]
811     cord_individual_obj[indivial_i, :] = [ 1. 5. 28. 33.]
812     cord_individual_obj[indivial_i, :] = [ 2. 5. 52. 57.]
813     cord_individual_obj[indivial_i, :] = [ 3. 6. 28. 34.]
814     cord_individual_obj[indivial_i, :] = [ 4. 6. 80. 86.]
815     cord_individual_obj[indivial_i, :] = [ 5. 5. 38. 43.]
816     cord_individual_obj[indivial_i, :] = [ 6. 6. 28. 34.]
817     cord_individual_obj[indivial_i, :] = [ 7. 4. 74. 78.]
818     cord_individual_obj[indivial_i, :] = [ 8. 6. 48. 54.]
819     cord_individual_obj[indivial_i, :] = [ 9. 5. 28. 33.]
820     cord_individual_obj[indivial_i, :] = [10. 6. 48. 54.]
821     cord_individual_obj[indivial_i, :] = [11. 5. 52. 57.]
822     cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
823     cord_individual_obj[indivial_i, :] = [13. 6. 38. 44.]
824     cord_individual_obj[indivial_i, :] = [14. 6. 44. 50.]
825
826 min(cord_individual_obj[:, 3]) = 14.0
827 historl_G_best_iter[iter, 3] = 14.0
828 Begin iteration:
829
830 iter = 38
831     cord_individual_obj[indivial_i, :] = [ 0. 4. 76. 80.]
832     cord_individual_obj[indivial_i, :] = [ 1. 5. 60. 65.]
833     cord_individual_obj[indivial_i, :] = [ 2. 5. 20. 25.]
834     cord_individual_obj[indivial_i, :] = [ 3. 6. 36. 42.]
835     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]

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unknown

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836 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
837 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
838 cord_individual_obj[indivial_i,:] = [ 7. 5. 22. 27.]
839 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
840 cord_individual_obj[indivial_i,:] = [ 9. 5. 16. 21.]
841 cord_individual_obj[indivial_i,:] = [10. 5. 44. 49.]
842 cord_individual_obj[indivial_i,:] = [11. 5. 96. 101.]
843 cord_individual_obj[indivial_i,:] = [12. 4. 46. 50.]
844 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
845 cord_individual_obj[indivial_i,:] = [14. 6. 28. 34.]
846
847 min(cord_individual_obj[:, 3]) = 14.0
848 historl_G_best_iter[iter, 3] = 14.0
849 Begin iteration:
850
851 iter = 39
852 cord_individual_obj[indivial_i,:] = [ 0. 4. 58. 62.]
853 cord_individual_obj[indivial_i,:] = [ 1. 5. 42. 47.]
854 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
855 cord_individual_obj[indivial_i,:] = [ 3. 6. 28. 34.]
856 cord_individual_obj[indivial_i,:] = [ 4. 6. 88. 94.]
857 cord_individual_obj[indivial_i,:] = [ 5. 5. 38. 43.]
858 cord_individual_obj[indivial_i,:] = [ 6. 6. 28. 34.]
859 cord_individual_obj[indivial_i,:] = [ 7. 6. 28. 34.]
860 cord_individual_obj[indivial_i,:] = [ 8. 6. 28. 34.]
861 cord_individual_obj[indivial_i,:] = [ 9. 6. 28. 34.]
862 cord_individual_obj[indivial_i,:] = [10. 5. 66. 71.]
863 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
864 cord_individual_obj[indivial_i,:] = [12. 5. 22. 27.]
865 cord_individual_obj[indivial_i,:] = [13. 6. 60. 66.]
866 cord_individual_obj[indivial_i,:] = [14. 5. 28. 33.]
867
868 min(cord_individual_obj[:, 3]) = 14.0
869 historl_G_best_iter[iter, 3] = 14.0
870 Begin iteration:
871
872 iter = 40
873 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
874 cord_individual_obj[indivial_i,:] = [ 1. 6. 16. 22.]
875 cord_individual_obj[indivial_i,:] = [ 2. 6. 44. 50.]
876 cord_individual_obj[indivial_i,:] = [ 3. 6. 36. 42.]
877 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
878 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
879 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
880 cord_individual_obj[indivial_i,:] = [ 7. 5. 116. 121.]
881 cord_individual_obj[indivial_i,:] = [ 8. 6. 14. 20.]
882 cord_individual_obj[indivial_i,:] = [ 9. 5. 16. 21.]
883 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
884 cord_individual_obj[indivial_i,:] = [11. 6. 38. 44.]
885 cord_individual_obj[indivial_i,:] = [12. 6. 60. 66.]
886 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
887 cord_individual_obj[indivial_i,:] = [14. 5. 16. 21.]
888
889 min(cord_individual_obj[:, 3]) = 14.0
890 historl_G_best_iter[iter, 3] = 14.0
891 Iteration calculate over
892
893
894
895
896 All item are in Bin and:
897 Bin area = 1080
898 Real_area = 101.0
899 Proportion_of_area = 0.09351851851851851
900 BEST_CHROM =
901   berth: [ 2.5 8. 26. 13.5 17.5 21. ]
902   time: [0. 0. 0. 0. 0. 0.]
903   num_QC: [2. 3. 2. 3. 2. 2.]
904 Objective function values and some other indicators:
905 Obj0 = 6.00      Obj1 = 8.00      Obj0 + Obj1 = 14.00
906 Total movement of crane: 8.00
907 Total waiting time in berth position: 0.00
908 Total index of q during berthing: 744.00
909 Specific arrangement for each vessel:
910   V_id: 0        li: 5.0        xi: 2.5        bow of i: 0.0        tail of i: 5.0        gama_i0: 0.0        gama_i1: 1.0
911                  gama_i1 + 1: 2.0        gama_i1 - gama_i0: 1.0        duration_time_i: 2.0        demand_i: 80.0        work load_i:
912                  work load gap_i: 0
913   V_id: 1        li: 6.0        xi: 8.0        bow of i: 5.0        tail of i: 11.0        gama_i0: 0.0        gama_i1: 1.0
914                  gama_i1 + 1: 2.0        gama_i1 - gama_i0: 1.0        duration_time_i: 2.0        demand_i: 120.0        work load_i:
915                  work load gap_i: 0
916   V_id: 2        li: 6.0        xi: 26.0        bow of i: 23.0        tail of i: 29.0        gama_i0: 0.0        gama_i1: 6
917                  gama_i1 + 1: 7.0        gama_i1 - gama_i0: 6.0        duration_time_i: 7.0        demand_i: 260.0        work
918                  work load gap_i: 0
919   V_id: 3        li: 5.0        xi: 13.5        bow of i: 11.0        tail of i: 16.0        gama_i0: 0.0        gama_i1: 1
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unknown

913 .0	gama_i1 + 1: 2.0	gama_i1 - gama_i0: 1.0	duration_time_i: 2.0	demand_i: 80.0	work
load_i: 80.0	work load gap_i: 0				
914 .0	V_id: 4	li: 3.0	xi: 17.5	bow of i: 16.0	tail of i: 19.0
load_i: 200.0	gama_i1 + 1: 5.0	gama_i1 - gama_i0: 4.0	duration_time_i: 5.0	gama_i0: 0.0	gama_i1: 4
915 .0	V_id: 5	li: 4.0	xi: 21.0	bow of i: 19.0	tail of i: 23.0
load_i: 220.0	gama_i1 + 1: 6.0	gama_i1 - gama_i0: 5.0	duration_time_i: 6.0	gama_i0: 0.0	gama_i1: 5
916	work load gap_i: 0				
917	Algorithm finished and the total CPU time: 211 s				
918	End				
919					