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1 "E:\My_Python\3\PyCharm\My_Python\My_LW\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=19221
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\My_Python\3\PyCharm\My_Python\My_LW\2\python code\01_My_Python_Code\main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/My_Python/3/PyCharm/My_Python/My_LW/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:/My_Python/3/PyCharm/My_Python/My_LW/2/python code/01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/My_Python/3/PyCharm/My_Python/My_LW/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_16_9_standerd_test.xlsx optimization process.
14
15 Start
16     Read basic data
17         V = 16
18         T = 36
19         Q = 23
20         L = 30
21 PSO parameter setting:
22     Trail = 31
23     maxIter_num = 20
24     W_inertia = 2.0
25     order_type_num = 25
26     c1 = 1.5
27     c2 = 1.5
28     r1 = 0.27891109190812147
29     r2 = 0.27891109190812147
30 Begin iteration:
31
32 iter = 0
33     cord_individual_obj[individual_i, :] = [ 0.  8. 145. 153.]
34     cord_individual_obj[individual_i, :] = [ 1.  9. 84. 93.]
35     cord_individual_obj[individual_i, :] = [ 2.  9. 73. 82.]
36     cord_individual_obj[individual_i, :] = [ 3.  8. 69. 77.]
37     cord_individual_obj[individual_i, :] = [ 4.  8. 54. 62.]
38     cord_individual_obj[individual_i, :] = [ 5.  7. 111. 118.]
39     cord_individual_obj[individual_i, :] = [ 6.  7. 110. 117.]
40     cord_individual_obj[individual_i, :] = [ 7.  9. 158. 167.]
41     cord_individual_obj[individual_i, :] = [ 8.  11. 118. 129.]
42     cord_individual_obj[individual_i, :] = [ 9.  10. 92. 102.]
43     cord_individual_obj[individual_i, :] = [ 10.  6. 152. 158.]
44     cord_individual_obj[individual_i, :] = [ 11.  10. 79. 89.]
45     cord_individual_obj[individual_i, :] = [ 12.  7. 114. 121.]
46     cord_individual_obj[individual_i, :] = [ 13.  10. 80. 90.]
47     cord_individual_obj[individual_i, :] = [ 14.  9. 126. 135.]
48     cord_individual_obj[individual_i, :] = [ 15.  9. 110. 119.]
49     cord_individual_obj[individual_i, :] = [ 16.  7. 96. 103.]
50     cord_individual_obj[individual_i, :] = [ 17.  8. 137. 145.]
51     cord_individual_obj[individual_i, :] = [ 18.  8. 122. 130.]
52     cord_individual_obj[individual_i, :] = [ 19.  7. 126. 133.]
53     cord_individual_obj[individual_i, :] = [ 20.  9. 99. 108.]
54     cord_individual_obj[individual_i, :] = [ 21.  9. 163. 172.]
55     cord_individual_obj[individual_i, :] = [ 22.  7. 76. 83.]
56     cord_individual_obj[individual_i, :] = [ 23.  7. 73. 80.]
57     cord_individual_obj[individual_i, :] = [ 24.  8. 72. 80.]
58
59 min(cord_individual_obj[:, 3]) = 62.0
60 historl_G_best_iter[iter, 3] = 62.0
61 Begin iteration:
62
63 iter = 1
64     cord_individual_obj[individual_i, :] = [ 0.  7. 75. 82.]
65     cord_individual_obj[individual_i, :] = [ 1.  10. 106. 116.]
66     cord_individual_obj[individual_i, :] = [ 2.  7. 80. 87.]
67     cord_individual_obj[individual_i, :] = [ 3.  7. 91. 98.]
68     cord_individual_obj[individual_i, :] = [ 4.  7. 96. 103.]
69     cord_individual_obj[individual_i, :] = [ 5.  9. 140. 149.]
70     cord_individual_obj[individual_i, :] = [ 6.  8. 64. 72.]
71     cord_individual_obj[individual_i, :] = [ 7.  8. 96. 104.]
72     cord_individual_obj[individual_i, :] = [ 8.  9. 85. 94.]
73     cord_individual_obj[individual_i, :] = [ 9.  8. 121. 129.]
74     cord_individual_obj[individual_i, :] = [ 10. 11. 119. 130.]
75     cord_individual_obj[individual_i, :] = [ 11. 7. 182. 189.]
76     cord_individual_obj[individual_i, :] = [ 12. 8. 117. 125.]
77     cord_individual_obj[individual_i, :] = [ 13. 7. 113. 120.]
78     cord_individual_obj[individual_i, :] = [ 14. 7. 107. 114.]
79     cord_individual_obj[individual_i, :] = [ 15. 9. 92. 101.]

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80 cord_individual_obj[indivial_i,:] = [ 16. 9. 124. 133.]
81 cord_individual_obj[indivial_i,:] = [ 17. 7. 95. 102.]
82 cord_individual_obj[indivial_i,:] = [18. 8. 83. 91.]
83 cord_individual_obj[indivial_i,:] = [ 19. 9. 105. 114.]
84 cord_individual_obj[indivial_i,:] = [ 20. 8. 98. 106.]
85 cord_individual_obj[indivial_i,:] = [21. 8. 54. 62.]
86 cord_individual_obj[indivial_i,:] = [ 22. 9. 113. 122.]
87 cord_individual_obj[indivial_i,:] = [ 23. 6. 94. 100.]
88 cord_individual_obj[indivial_i,:] = [ 24. 10. 161. 171.]
89
90 min(cord_individual_obj[:,3]) = 62.0
91 historl_G_best_iter[iter, 3] = 62.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 8. 72. 80.]
96 cord_individual_obj[indivial_i,:] = [ 1. 8. 91. 99.]
97 cord_individual_obj[indivial_i,:] = [ 2. 9. 101. 110.]
98 cord_individual_obj[indivial_i,:] = [ 3. 7. 78. 85.]
99 cord_individual_obj[indivial_i,:] = [ 4. 7. 115. 122.]
100 cord_individual_obj[indivial_i,:] = [ 5. 7. 112. 119.]
101 cord_individual_obj[indivial_i,:] = [ 6. 9. 88. 97.]
102 cord_individual_obj[indivial_i,:] = [ 7. 8. 91. 99.]
103 cord_individual_obj[indivial_i,:] = [ 8. 9. 128. 137.]
104 cord_individual_obj[indivial_i,:] = [ 9. 12. 135. 147.]
105 cord_individual_obj[indivial_i,:] = [ 10. 9. 190. 199.]
106 cord_individual_obj[indivial_i,:] = [11. 8. 54. 62.]
107 cord_individual_obj[indivial_i,:] = [12. 8. 62. 70.]
108 cord_individual_obj[indivial_i,:] = [13. 9. 106. 115.]
109 cord_individual_obj[indivial_i,:] = [14. 9. 142. 151.]
110 cord_individual_obj[indivial_i,:] = [15. 9. 165. 174.]
111 cord_individual_obj[indivial_i,:] = [16. 7. 98. 105.]
112 cord_individual_obj[indivial_i,:] = [17. 8. 140. 148.]
113 cord_individual_obj[indivial_i,:] = [18. 8. 111. 119.]
114 cord_individual_obj[indivial_i,:] = [19. 8. 123. 131.]
115 cord_individual_obj[indivial_i,:] = [20. 10. 108. 118.]
116 cord_individual_obj[indivial_i,:] = [21. 10. 100. 110.]
117 cord_individual_obj[indivial_i,:] = [22. 8. 132. 140.]
118 cord_individual_obj[indivial_i,:] = [23. 6. 117. 123.]
119 cord_individual_obj[indivial_i,:] = [24. 7. 140. 147.]
120
121 min(cord_individual_obj[:,3]) = 62.0
122 historl_G_best_iter[iter, 3] = 62.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 9. 110. 119.]
127 cord_individual_obj[indivial_i,:] = [ 1. 9. 141. 150.]
128 cord_individual_obj[indivial_i,:] = [ 2. 7. 156. 163.]
129 cord_individual_obj[indivial_i,:] = [ 3. 7. 160. 167.]
130 cord_individual_obj[indivial_i,:] = [ 4. 8. 104. 112.]
131 cord_individual_obj[indivial_i,:] = [ 5. 8. 104. 112.]
132 cord_individual_obj[indivial_i,:] = [ 6. 7. 107. 114.]
133 cord_individual_obj[indivial_i,:] = [ 7. 7. 101. 108.]
134 cord_individual_obj[indivial_i,:] = [ 8. 9. 95. 104.]
135 cord_individual_obj[indivial_i,:] = [ 9. 7. 149. 156.]
136 cord_individual_obj[indivial_i,:] = [10. 8. 54. 62.]
137 cord_individual_obj[indivial_i,:] = [11. 9. 108. 117.]
138 cord_individual_obj[indivial_i,:] = [12. 11. 104. 115.]
139 cord_individual_obj[indivial_i,:] = [13. 7. 154. 161.]
140 cord_individual_obj[indivial_i,:] = [14. 11. 112. 123.]
141 cord_individual_obj[indivial_i,:] = [15. 9. 127. 136.]
142 cord_individual_obj[indivial_i,:] = [16. 7. 83. 90.]
143 cord_individual_obj[indivial_i,:] = [17. 8. 95. 103.]
144 cord_individual_obj[indivial_i,:] = [18. 8. 123. 131.]
145 cord_individual_obj[indivial_i,:] = [19. 9. 111. 120.]
146 cord_individual_obj[indivial_i,:] = [20. 9. 136. 145.]
147 cord_individual_obj[indivial_i,:] = [21. 8. 108. 116.]
148 cord_individual_obj[indivial_i,:] = [22. 8. 69. 77.]
149 cord_individual_obj[indivial_i,:] = [23. 11. 175. 186.]
150 cord_individual_obj[indivial_i,:] = [24. 9. 98. 107.]
151
152 min(cord_individual_obj[:,3]) = 62.0
153 historl_G_best_iter[iter, 3] = 62.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 8. 90. 98.]
158 cord_individual_obj[indivial_i,:] = [ 1. 8. 97. 105.]
159 cord_individual_obj[indivial_i,:] = [ 2. 8. 159. 167.]
160 cord_individual_obj[indivial_i,:] = [ 3. 6. 90. 96.]
161 cord_individual_obj[indivial_i,:] = [ 4. 7. 109. 116.]
162 cord_individual_obj[indivial_i,:] = [ 5. 6. 90. 96.]
163 cord_individual_obj[indivial_i,:] = [ 6. 8. 79. 87.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 7. 75. 82.]
165 cord_individual_obj[indivial_i, :] = [ 8. 8. 113. 121.]
166 cord_individual_obj[indivial_i, :] = [ 9. 8. 172. 180.]
167 cord_individual_obj[indivial_i, :] = [ 10. 11. 121. 132.]
168 cord_individual_obj[indivial_i, :] = [ 11. 10. 94. 104.]
169 cord_individual_obj[indivial_i, :] = [ 12. 7. 102. 109.]
170 cord_individual_obj[indivial_i, :] = [ 13. 8. 134. 142.]
171 cord_individual_obj[indivial_i, :] = [ 14. 10. 124. 134.]
172 cord_individual_obj[indivial_i, :] = [ 15. 8. 121. 129.]
173 cord_individual_obj[indivial_i, :] = [ 16. 8. 101. 109.]
174 cord_individual_obj[indivial_i, :] = [ 17. 9. 106. 115.]
175 cord_individual_obj[indivial_i, :] = [ 18. 8. 72. 80.]
176 cord_individual_obj[indivial_i, :] = [ 19. 8. 77. 85.]
177 cord_individual_obj[indivial_i, :] = [ 20. 8. 123. 131.]
178 cord_individual_obj[indivial_i, :] = [ 21. 8. 86. 94.]
179 cord_individual_obj[indivial_i, :] = [ 22. 10. 95. 105.]
180 cord_individual_obj[indivial_i, :] = [ 23. 8. 54. 62.]
181 cord_individual_obj[indivial_i, :] = [ 24. 8. 129. 137.]
182
183 min(cord_individual_obj[:, 3]) = 62.0
184 historl_G_best_iter[iter, 3] = 62.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 7. 98. 105.]
189 cord_individual_obj[indivial_i, :] = [ 1. 9. 115. 124.]
190 cord_individual_obj[indivial_i, :] = [ 2. 8. 180. 188.]
191 cord_individual_obj[indivial_i, :] = [ 3. 7. 119. 126.]
192 cord_individual_obj[indivial_i, :] = [ 4. 7. 95. 102.]
193 cord_individual_obj[indivial_i, :] = [ 5. 7. 102. 109.]
194 cord_individual_obj[indivial_i, :] = [ 6. 10. 126. 136.]
195 cord_individual_obj[indivial_i, :] = [ 7. 8. 136. 144.]
196 cord_individual_obj[indivial_i, :] = [ 8. 7. 134. 141.]
197 cord_individual_obj[indivial_i, :] = [ 9. 8. 54. 62.]
198 cord_individual_obj[indivial_i, :] = [ 10. 8. 84. 92.]
199 cord_individual_obj[indivial_i, :] = [ 11. 10. 144. 154.]
200 cord_individual_obj[indivial_i, :] = [ 12. 7. 93. 100.]
201 cord_individual_obj[indivial_i, :] = [ 13. 7. 83. 90.]
202 cord_individual_obj[indivial_i, :] = [ 14. 10. 103. 113.]
203 cord_individual_obj[indivial_i, :] = [ 15. 9. 160. 169.]
204 cord_individual_obj[indivial_i, :] = [ 16. 8. 103. 111.]
205 cord_individual_obj[indivial_i, :] = [ 17. 10. 164. 174.]
206 cord_individual_obj[indivial_i, :] = [ 18. 8. 98. 106.]
207 cord_individual_obj[indivial_i, :] = [ 19. 9. 118. 127.]
208 cord_individual_obj[indivial_i, :] = [ 20. 9. 116. 125.]
209 cord_individual_obj[indivial_i, :] = [ 21. 10. 141. 151.]
210 cord_individual_obj[indivial_i, :] = [ 22. 8. 126. 134.]
211 cord_individual_obj[indivial_i, :] = [ 23. 8. 101. 109.]
212 cord_individual_obj[indivial_i, :] = [ 24. 8. 115. 123.]
213
214 min(cord_individual_obj[:, 3]) = 62.0
215 historl_G_best_iter[iter, 3] = 62.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 8. 86. 94.]
220 cord_individual_obj[indivial_i, :] = [ 1. 9. 140. 149.]
221 cord_individual_obj[indivial_i, :] = [ 2. 8. 54. 62.]
222 cord_individual_obj[indivial_i, :] = [ 3. 8. 56. 64.]
223 cord_individual_obj[indivial_i, :] = [ 4. 7. 133. 140.]
224 cord_individual_obj[indivial_i, :] = [ 5. 7. 115. 122.]
225 cord_individual_obj[indivial_i, :] = [ 6. 8. 85. 93.]
226 cord_individual_obj[indivial_i, :] = [ 7. 8. 84. 92.]
227 cord_individual_obj[indivial_i, :] = [ 8. 10. 124. 134.]
228 cord_individual_obj[indivial_i, :] = [ 9. 8. 185. 193.]
229 cord_individual_obj[indivial_i, :] = [ 10. 10. 105. 115.]
230 cord_individual_obj[indivial_i, :] = [ 11. 10. 160. 170.]
231 cord_individual_obj[indivial_i, :] = [ 12. 6. 174. 180.]
232 cord_individual_obj[indivial_i, :] = [ 13. 9. 134. 143.]
233 cord_individual_obj[indivial_i, :] = [ 14. 10. 120. 130.]
234 cord_individual_obj[indivial_i, :] = [ 15. 7. 114. 121.]
235 cord_individual_obj[indivial_i, :] = [ 16. 12. 112. 124.]
236 cord_individual_obj[indivial_i, :] = [ 17. 7. 88. 95.]
237 cord_individual_obj[indivial_i, :] = [ 18. 9. 119. 128.]
238 cord_individual_obj[indivial_i, :] = [ 19. 10. 132. 142.]
239 cord_individual_obj[indivial_i, :] = [ 20. 9. 102. 111.]
240 cord_individual_obj[indivial_i, :] = [ 21. 8. 85. 93.]
241 cord_individual_obj[indivial_i, :] = [ 22. 8. 104. 112.]
242 cord_individual_obj[indivial_i, :] = [ 23. 8. 83. 91.]
243 cord_individual_obj[indivial_i, :] = [ 24. 8. 109. 117.]
244
245 min(cord_individual_obj[:, 3]) = 62.0
246 historl_G_best_iter[iter, 3] = 62.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0. 8. 120. 128.]
251 cord_individual_obj[indivial_i, :] = [ 1. 9. 90. 99.]
252 cord_individual_obj[indivial_i, :] = [ 2. 8. 127. 135.]
253 cord_individual_obj[indivial_i, :] = [ 3. 7. 123. 130.]
254 cord_individual_obj[indivial_i, :] = [ 4. 10. 128. 138.]
255 cord_individual_obj[indivial_i, :] = [ 5. 8. 72. 80.]
256 cord_individual_obj[indivial_i, :] = [ 6. 10. 139. 149.]
257 cord_individual_obj[indivial_i, :] = [ 7. 8. 85. 93.]
258 cord_individual_obj[indivial_i, :] = [ 8. 9. 135. 144.]
259 cord_individual_obj[indivial_i, :] = [ 9. 8. 54. 62.]
260 cord_individual_obj[indivial_i, :] = [ 10. 10. 132. 142.]
261 cord_individual_obj[indivial_i, :] = [ 11. 10. 122. 132.]
262 cord_individual_obj[indivial_i, :] = [ 12. 10. 112. 122.]
263 cord_individual_obj[indivial_i, :] = [ 13. 8. 134. 142.]
264 cord_individual_obj[indivial_i, :] = [ 14. 10. 92. 102.]
265 cord_individual_obj[indivial_i, :] = [ 15. 9. 140. 149.]
266 cord_individual_obj[indivial_i, :] = [ 16. 7. 130. 137.]
267 cord_individual_obj[indivial_i, :] = [ 17. 8. 103. 111.]
268 cord_individual_obj[indivial_i, :] = [ 18. 9. 145. 154.]
269 cord_individual_obj[indivial_i, :] = [ 19. 10. 136. 146.]
270 cord_individual_obj[indivial_i, :] = [ 20. 7. 87. 94.]
271 cord_individual_obj[indivial_i, :] = [ 21. 10. 77. 87.]
272 cord_individual_obj[indivial_i, :] = [ 22. 8. 174. 182.]
273 cord_individual_obj[indivial_i, :] = [ 23. 9. 75. 84.]
274 cord_individual_obj[indivial_i, :] = [ 24. 8. 130. 138.]
275

276 min(cord_individual_obj[:, 3]) = 62.0
277 historl_G_best_iter[iter, 3] = 62.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0. 8. 88. 96.]
282 cord_individual_obj[indivial_i, :] = [ 1. 8. 142. 150.]
283 cord_individual_obj[indivial_i, :] = [ 2. 7. 74. 81.]
284 cord_individual_obj[indivial_i, :] = [ 3. 8. 112. 120.]
285 cord_individual_obj[indivial_i, :] = [ 4. 8. 147. 155.]
286 cord_individual_obj[indivial_i, :] = [ 5. 8. 127. 135.]
287 cord_individual_obj[indivial_i, :] = [ 6. 9. 104. 113.]
288 cord_individual_obj[indivial_i, :] = [ 7. 7. 109. 116.]
289 cord_individual_obj[indivial_i, :] = [ 8. 9. 118. 127.]
290 cord_individual_obj[indivial_i, :] = [ 9. 9. 64. 73.]
291 cord_individual_obj[indivial_i, :] = [ 10. 9. 63. 72.]
292 cord_individual_obj[indivial_i, :] = [ 11. 10. 137. 147.]
293 cord_individual_obj[indivial_i, :] = [ 12. 8. 166. 174.]
294 cord_individual_obj[indivial_i, :] = [ 13. 8. 102. 110.]
295 cord_individual_obj[indivial_i, :] = [ 14. 8. 76. 84.]
296 cord_individual_obj[indivial_i, :] = [ 15. 8. 97. 105.]
297 cord_individual_obj[indivial_i, :] = [ 16. 9. 129. 138.]
298 cord_individual_obj[indivial_i, :] = [ 17. 8. 140. 148.]
299 cord_individual_obj[indivial_i, :] = [ 18. 8. 81. 89.]
300 cord_individual_obj[indivial_i, :] = [ 19. 7. 80. 87.]
301 cord_individual_obj[indivial_i, :] = [ 20. 7. 82. 89.]
302 cord_individual_obj[indivial_i, :] = [ 21. 9. 80. 89.]
303 cord_individual_obj[indivial_i, :] = [ 22. 8. 54. 62.]
304 cord_individual_obj[indivial_i, :] = [ 23. 9. 93. 102.]
305 cord_individual_obj[indivial_i, :] = [ 24. 10. 143. 153.]
306

307 min(cord_individual_obj[:, 3]) = 62.0
308 historl_G_best_iter[iter, 3] = 62.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0. 7. 74. 81.]
313 cord_individual_obj[indivial_i, :] = [ 1. 10. 75. 85.]
314 cord_individual_obj[indivial_i, :] = [ 2. 8. 133. 141.]
315 cord_individual_obj[indivial_i, :] = [ 3. 7. 79. 86.]
316 cord_individual_obj[indivial_i, :] = [ 4. 8. 142. 150.]
317 cord_individual_obj[indivial_i, :] = [ 5. 10. 112. 122.]
318 cord_individual_obj[indivial_i, :] = [ 6. 8. 91. 99.]
319 cord_individual_obj[indivial_i, :] = [ 7. 9. 125. 134.]
320 cord_individual_obj[indivial_i, :] = [ 8. 9. 105. 114.]
321 cord_individual_obj[indivial_i, :] = [ 9. 9. 142. 151.]
322 cord_individual_obj[indivial_i, :] = [ 10. 12. 113. 125.]
323 cord_individual_obj[indivial_i, :] = [ 11. 12. 126. 138.]
324 cord_individual_obj[indivial_i, :] = [ 12. 8. 54. 62.]
325 cord_individual_obj[indivial_i, :] = [ 13. 10. 128. 138.]
326 cord_individual_obj[indivial_i, :] = [ 14. 8. 125. 133.]
327 cord_individual_obj[indivial_i, :] = [ 15. 8. 120. 128.]
328 cord_individual_obj[indivial_i, :] = [ 16. 8. 87. 95.]
329 cord_individual_obj[indivial_i, :] = [ 17. 10. 119. 129.]
330 cord_individual_obj[indivial_i, :] = [ 18. 10. 78. 88.]
331 cord_individual_obj[indivial_i, :] = [ 19. 8. 120. 128.]

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332     cord_individual_obj[indivial_i, :] = [ 20.  8. 109. 117.]
333     cord_individual_obj[indivial_i, :] = [ 21.  9. 129. 138.]
334     cord_individual_obj[indivial_i, :] = [ 22.  9. 160. 169.]
335     cord_individual_obj[indivial_i, :] = [ 23. 10. 92. 102.]
336     cord_individual_obj[indivial_i, :] = [ 24.  9. 81. 90.]
337
338 min(cord_individual_obj[:, 3]) = 62.0
339 histol_G_best_iter[iter, 3] = 62.0
340 Begin iteration:
341
342 iter = 10
343     cord_individual_obj[indivial_i, :] = [ 0.  8. 130. 138.]
344     cord_individual_obj[indivial_i, :] = [ 1. 10. 186. 196.]
345     cord_individual_obj[indivial_i, :] = [ 2.  7. 123. 130.]
346     cord_individual_obj[indivial_i, :] = [ 3.  8. 119. 127.]
347     cord_individual_obj[indivial_i, :] = [ 4.  7. 134. 141.]
348     cord_individual_obj[indivial_i, :] = [ 5.  7. 139. 146.]
349     cord_individual_obj[indivial_i, :] = [ 6. 10. 106. 116.]
350     cord_individual_obj[indivial_i, :] = [ 7.  7. 98. 105.]
351     cord_individual_obj[indivial_i, :] = [ 8.  9. 125. 134.]
352     cord_individual_obj[indivial_i, :] = [ 9.  9. 111. 120.]
353     cord_individual_obj[indivial_i, :] = [10.  9. 142. 151.]
354     cord_individual_obj[indivial_i, :] = [11.  9. 98. 107.]
355     cord_individual_obj[indivial_i, :] = [12.  7. 99. 106.]
356     cord_individual_obj[indivial_i, :] = [13.  8. 121. 129.]
357     cord_individual_obj[indivial_i, :] = [14.  9. 88. 97.]
358     cord_individual_obj[indivial_i, :] = [15.  8. 168. 176.]
359     cord_individual_obj[indivial_i, :] = [16.  9. 81. 90.]
360     cord_individual_obj[indivial_i, :] = [17.  9. 154. 163.]
361     cord_individual_obj[indivial_i, :] = [18.  9. 105. 114.]
362     cord_individual_obj[indivial_i, :] = [19.  8. 96. 104.]
363     cord_individual_obj[indivial_i, :] = [20.  9. 144. 153.]
364     cord_individual_obj[indivial_i, :] = [21. 10. 81. 91.]
365     cord_individual_obj[indivial_i, :] = [22.  8. 54. 62.]
366     cord_individual_obj[indivial_i, :] = [23. 11. 99. 110.]
367     cord_individual_obj[indivial_i, :] = [24.  9. 126. 135.]
368
369 min(cord_individual_obj[:, 3]) = 62.0
370 histol_G_best_iter[iter, 3] = 62.0
371 Begin iteration:
372
373 iter = 11
374     cord_individual_obj[indivial_i, :] = [ 0.  7. 138. 145.]
375     cord_individual_obj[indivial_i, :] = [ 1.  8. 54. 62.]
376     cord_individual_obj[indivial_i, :] = [ 2. 10. 113. 123.]
377     cord_individual_obj[indivial_i, :] = [ 3.  7. 143. 150.]
378     cord_individual_obj[indivial_i, :] = [ 4.  9. 100. 109.]
379     cord_individual_obj[indivial_i, :] = [ 5.  9. 144. 153.]
380     cord_individual_obj[indivial_i, :] = [ 6.  8. 141. 149.]
381     cord_individual_obj[indivial_i, :] = [ 7.  7. 96. 103.]
382     cord_individual_obj[indivial_i, :] = [ 8.  9. 99. 108.]
383     cord_individual_obj[indivial_i, :] = [ 9.  8. 106. 114.]
384     cord_individual_obj[indivial_i, :] = [10.  8. 78. 86.]
385     cord_individual_obj[indivial_i, :] = [11.  9. 88. 97.]
386     cord_individual_obj[indivial_i, :] = [12.  6. 108. 114.]
387     cord_individual_obj[indivial_i, :] = [13. 10. 142. 152.]
388     cord_individual_obj[indivial_i, :] = [14.  9. 104. 113.]
389     cord_individual_obj[indivial_i, :] = [15.  7. 110. 117.]
390     cord_individual_obj[indivial_i, :] = [16. 10. 150. 160.]
391     cord_individual_obj[indivial_i, :] = [17.  7. 156. 163.]
392     cord_individual_obj[indivial_i, :] = [18. 11. 121. 132.]
393     cord_individual_obj[indivial_i, :] = [19.  9. 200. 209.]
394     cord_individual_obj[indivial_i, :] = [20.  8. 92. 100.]
395     cord_individual_obj[indivial_i, :] = [21. 10. 70. 80.]
396     cord_individual_obj[indivial_i, :] = [22.  8. 137. 145.]
397     cord_individual_obj[indivial_i, :] = [23.  8. 122. 130.]
398     cord_individual_obj[indivial_i, :] = [24.  9. 82. 91.]
399
400 min(cord_individual_obj[:, 3]) = 62.0
401 histol_G_best_iter[iter, 3] = 62.0
402 Begin iteration:
403
404 iter = 12
405     cord_individual_obj[indivial_i, :] = [ 0.  9. 153. 162.]
406     cord_individual_obj[indivial_i, :] = [ 1. 10. 89. 99.]
407     cord_individual_obj[indivial_i, :] = [ 2.  7. 110. 117.]
408     cord_individual_obj[indivial_i, :] = [ 3.  9. 97. 106.]
409     cord_individual_obj[indivial_i, :] = [ 4.  7. 102. 109.]
410     cord_individual_obj[indivial_i, :] = [ 5.  7. 125. 132.]
411     cord_individual_obj[indivial_i, :] = [ 6.  8. 113. 121.]
412     cord_individual_obj[indivial_i, :] = [ 7.  8. 97. 105.]
413     cord_individual_obj[indivial_i, :] = [ 8.  8. 121. 129.]
414     cord_individual_obj[indivial_i, :] = [ 9.  8. 115. 123.]
415     cord_individual_obj[indivial_i, :] = [10.  9. 78. 87.]

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416 cord_individual_obj[indivial_i,:] = [ 11. 9. 141. 150.]
417 cord_individual_obj[indivial_i,:] = [12. 8. 90. 98.]
418 cord_individual_obj[indivial_i,:] = [ 13. 7. 113. 120.]
419 cord_individual_obj[indivial_i,:] = [ 14. 9. 97. 106.]
420 cord_individual_obj[indivial_i,:] = [ 15. 8. 103. 111.]
421 cord_individual_obj[indivial_i,:] = [ 16. 8. 156. 164.]
422 cord_individual_obj[indivial_i,:] = [ 17. 10. 153. 163.]
423 cord_individual_obj[indivial_i,:] = [18. 9. 81. 90.]
424 cord_individual_obj[indivial_i,:] = [19. 8. 54. 62.]
425 cord_individual_obj[indivial_i,:] = [ 20. 7. 120. 127.]
426 cord_individual_obj[indivial_i,:] = [ 21. 8. 96. 104.]
427 cord_individual_obj[indivial_i,:] = [ 22. 8. 149. 157.]
428 cord_individual_obj[indivial_i,:] = [ 23. 9. 110. 119.]
429 cord_individual_obj[indivial_i,:] = [ 24. 10. 132. 142.]
430
431 min(cord_individual_obj[:,3]) = 62.0
432 histol_G_best_iter[iter,3] = 62.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 9. 106. 115.]
437 cord_individual_obj[indivial_i,:] = [ 1. 7. 110. 117.]
438 cord_individual_obj[indivial_i,:] = [ 2. 10. 126. 136.]
439 cord_individual_obj[indivial_i,:] = [ 3. 7. 98. 105.]
440 cord_individual_obj[indivial_i,:] = [ 4. 9. 108. 117.]
441 cord_individual_obj[indivial_i,:] = [ 5. 7. 65. 72.]
442 cord_individual_obj[indivial_i,:] = [ 6. 9. 91. 100.]
443 cord_individual_obj[indivial_i,:] = [ 7. 8. 85. 93.]
444 cord_individual_obj[indivial_i,:] = [ 8. 9. 80. 89.]
445 cord_individual_obj[indivial_i,:] = [ 9. 9. 124. 133.]
446 cord_individual_obj[indivial_i,:] = [10. 9. 107. 116.]
447 cord_individual_obj[indivial_i,:] = [11. 9. 138. 147.]
448 cord_individual_obj[indivial_i,:] = [12. 8. 79. 87.]
449 cord_individual_obj[indivial_i,:] = [13. 8. 98. 106.]
450 cord_individual_obj[indivial_i,:] = [14. 12. 109. 121.]
451 cord_individual_obj[indivial_i,:] = [15. 8. 102. 110.]
452 cord_individual_obj[indivial_i,:] = [16. 8. 54. 62.]
453 cord_individual_obj[indivial_i,:] = [17. 9. 92. 101.]
454 cord_individual_obj[indivial_i,:] = [18. 8. 108. 116.]
455 cord_individual_obj[indivial_i,:] = [19. 9. 108. 117.]
456 cord_individual_obj[indivial_i,:] = [20. 8. 133. 141.]
457 cord_individual_obj[indivial_i,:] = [21. 9. 108. 117.]
458 cord_individual_obj[indivial_i,:] = [22. 10. 168. 178.]
459 cord_individual_obj[indivial_i,:] = [23. 10. 165. 175.]
460 cord_individual_obj[indivial_i,:] = [24. 8. 131. 139.]
461
462 min(cord_individual_obj[:,3]) = 62.0
463 histol_G_best_iter[iter,3] = 62.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 8. 127. 135.]
468 cord_individual_obj[indivial_i,:] = [ 1. 9. 83. 92.]
469 cord_individual_obj[indivial_i,:] = [ 2. 7. 126. 133.]
470 cord_individual_obj[indivial_i,:] = [ 3. 6. 78. 84.]
471 cord_individual_obj[indivial_i,:] = [ 4. 8. 99. 107.]
472 cord_individual_obj[indivial_i,:] = [ 5. 9. 114. 123.]
473 cord_individual_obj[indivial_i,:] = [ 6. 7. 78. 85.]
474 cord_individual_obj[indivial_i,:] = [ 7. 7. 113. 120.]
475 cord_individual_obj[indivial_i,:] = [ 8. 8. 160. 168.]
476 cord_individual_obj[indivial_i,:] = [ 9. 8. 149. 157.]
477 cord_individual_obj[indivial_i,:] = [10. 9. 91. 100.]
478 cord_individual_obj[indivial_i,:] = [11. 9. 94. 103.]
479 cord_individual_obj[indivial_i,:] = [12. 8. 91. 99.]
480 cord_individual_obj[indivial_i,:] = [13. 9. 118. 127.]
481 cord_individual_obj[indivial_i,:] = [14. 10. 108. 118.]
482 cord_individual_obj[indivial_i,:] = [15. 8. 105. 113.]
483 cord_individual_obj[indivial_i,:] = [16. 8. 74. 82.]
484 cord_individual_obj[indivial_i,:] = [17. 9. 91. 100.]
485 cord_individual_obj[indivial_i,:] = [18. 10. 129. 139.]
486 cord_individual_obj[indivial_i,:] = [19. 9. 111. 120.]
487 cord_individual_obj[indivial_i,:] = [20. 8. 110. 118.]
488 cord_individual_obj[indivial_i,:] = [21. 9. 94. 103.]
489 cord_individual_obj[indivial_i,:] = [22. 8. 54. 62.]
490 cord_individual_obj[indivial_i,:] = [23. 11. 138. 149.]
491 cord_individual_obj[indivial_i,:] = [24. 10. 151. 161.]
492
493 min(cord_individual_obj[:,3]) = 62.0
494 histol_G_best_iter[iter,3] = 62.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 7. 109. 116.]
499 cord_individual_obj[indivial_i,:] = [ 1. 10. 89. 99.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 9. 129. 138.]
501 cord_individual_obj[indivial_i,:] = [ 3. 8. 113. 121.]
502 cord_individual_obj[indivial_i,:] = [ 4. 8. 105. 113.]
503 cord_individual_obj[indivial_i,:] = [ 5. 8. 99. 107.]
504 cord_individual_obj[indivial_i,:] = [ 6. 8. 112. 120.]
505 cord_individual_obj[indivial_i,:] = [ 7. 8. 94. 102.]
506 cord_individual_obj[indivial_i,:] = [ 8. 8. 54. 62.]
507 cord_individual_obj[indivial_i,:] = [ 9. 8. 142. 150.]
508 cord_individual_obj[indivial_i,:] = [ 10. 11. 164. 175.]
509 cord_individual_obj[indivial_i,:] = [ 11. 11. 122. 133.]
510 cord_individual_obj[indivial_i,:] = [ 12. 8. 88. 96.]
511 cord_individual_obj[indivial_i,:] = [ 13. 7. 126. 133.]
512 cord_individual_obj[indivial_i,:] = [ 14. 9. 104. 113.]
513 cord_individual_obj[indivial_i,:] = [ 15. 10. 131. 141.]
514 cord_individual_obj[indivial_i,:] = [ 16. 8. 119. 127.]
515 cord_individual_obj[indivial_i,:] = [ 17. 7. 89. 96.]
516 cord_individual_obj[indivial_i,:] = [ 18. 8. 115. 123.]
517 cord_individual_obj[indivial_i,:] = [ 19. 9. 108. 117.]
518 cord_individual_obj[indivial_i,:] = [ 20. 9. 80. 89.]
519 cord_individual_obj[indivial_i,:] = [ 21. 9. 77. 86.]
520 cord_individual_obj[indivial_i,:] = [ 22. 10. 75. 85.]
521 cord_individual_obj[indivial_i,:] = [ 23. 8. 124. 132.]
522 cord_individual_obj[indivial_i,:] = [ 24. 9. 100. 109.]
523
524 min(cord_individual_obj[:, 3]) = 62.0
525 histol_G_best_iter[iter, 3] = 62.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 9. 124. 133.]
530 cord_individual_obj[indivial_i,:] = [ 1. 10. 135. 145.]
531 cord_individual_obj[indivial_i,:] = [ 2. 8. 112. 120.]
532 cord_individual_obj[indivial_i,:] = [ 3. 7. 129. 136.]
533 cord_individual_obj[indivial_i,:] = [ 4. 8. 106. 114.]
534 cord_individual_obj[indivial_i,:] = [ 5. 6. 127. 133.]
535 cord_individual_obj[indivial_i,:] = [ 6. 8. 140. 148.]
536 cord_individual_obj[indivial_i,:] = [ 7. 7. 106. 113.]
537 cord_individual_obj[indivial_i,:] = [ 8. 9. 201. 210.]
538 cord_individual_obj[indivial_i,:] = [ 9. 7. 132. 139.]
539 cord_individual_obj[indivial_i,:] = [ 10. 8. 54. 62.]
540 cord_individual_obj[indivial_i,:] = [ 11. 7. 96. 103.]
541 cord_individual_obj[indivial_i,:] = [ 12. 9. 152. 161.]
542 cord_individual_obj[indivial_i,:] = [ 13. 9. 138. 147.]
543 cord_individual_obj[indivial_i,:] = [ 14. 10. 135. 145.]
544 cord_individual_obj[indivial_i,:] = [ 15. 7. 86. 93.]
545 cord_individual_obj[indivial_i,:] = [ 16. 10. 99. 109.]
546 cord_individual_obj[indivial_i,:] = [ 17. 7. 111. 118.]
547 cord_individual_obj[indivial_i,:] = [ 18. 9. 151. 160.]
548 cord_individual_obj[indivial_i,:] = [ 19. 8. 116. 124.]
549 cord_individual_obj[indivial_i,:] = [ 20. 9. 137. 146.]
550 cord_individual_obj[indivial_i,:] = [ 21. 10. 97. 107.]
551 cord_individual_obj[indivial_i,:] = [ 22. 13. 116. 129.]
552 cord_individual_obj[indivial_i,:] = [ 23. 9. 143. 152.]
553 cord_individual_obj[indivial_i,:] = [ 24. 8. 142. 150.]
554
555 min(cord_individual_obj[:, 3]) = 62.0
556 histol_G_best_iter[iter, 3] = 62.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 9. 133. 142.]
561 cord_individual_obj[indivial_i,:] = [ 1. 9. 172. 181.]
562 cord_individual_obj[indivial_i,:] = [ 2. 7. 162. 169.]
563 cord_individual_obj[indivial_i,:] = [ 3. 6. 140. 146.]
564 cord_individual_obj[indivial_i,:] = [ 4. 9. 119. 128.]
565 cord_individual_obj[indivial_i,:] = [ 5. 8. 141. 149.]
566 cord_individual_obj[indivial_i,:] = [ 6. 9. 111. 120.]
567 cord_individual_obj[indivial_i,:] = [ 7. 9. 95. 104.]
568 cord_individual_obj[indivial_i,:] = [ 8. 8. 54. 62.]
569 cord_individual_obj[indivial_i,:] = [ 9. 9. 111. 120.]
570 cord_individual_obj[indivial_i,:] = [ 10. 9. 110. 119.]
571 cord_individual_obj[indivial_i,:] = [ 11. 8. 183. 191.]
572 cord_individual_obj[indivial_i,:] = [ 12. 8. 116. 124.]
573 cord_individual_obj[indivial_i,:] = [ 13. 8. 138. 146.]
574 cord_individual_obj[indivial_i,:] = [ 14. 10. 112. 122.]
575 cord_individual_obj[indivial_i,:] = [ 15. 11. 179. 190.]
576 cord_individual_obj[indivial_i,:] = [ 16. 8. 123. 131.]
577 cord_individual_obj[indivial_i,:] = [ 17. 8. 118. 126.]
578 cord_individual_obj[indivial_i,:] = [ 18. 11. 96. 107.]
579 cord_individual_obj[indivial_i,:] = [ 19. 9. 102. 111.]
580 cord_individual_obj[indivial_i,:] = [ 20. 11. 134. 145.]
581 cord_individual_obj[indivial_i,:] = [ 21. 9. 108. 117.]
582 cord_individual_obj[indivial_i,:] = [ 22. 9. 104. 113.]
583 cord_individual_obj[indivial_i,:] = [ 23. 8. 154. 162.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 8. 75. 83.]
585
586     min(cord_individual_obj[:, 3]) = 62.0
587     historl_G_best_iter[iter, 3] = 62.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0. 7. 115. 122.]
592     cord_individual_obj[indivial_i, :] = [ 1. 10. 148. 158.]
593     cord_individual_obj[indivial_i, :] = [ 2. 7. 89. 96.]
594     cord_individual_obj[indivial_i, :] = [ 3. 7. 137. 144.]
595     cord_individual_obj[indivial_i, :] = [ 4. 8. 91. 99.]
596     cord_individual_obj[indivial_i, :] = [ 5. 7. 113. 120.]
597     cord_individual_obj[indivial_i, :] = [ 6. 10. 60. 70.]
598     cord_individual_obj[indivial_i, :] = [ 7. 8. 113. 121.]
599     cord_individual_obj[indivial_i, :] = [ 8. 9. 182. 191.]
600     cord_individual_obj[indivial_i, :] = [ 9. 7. 58. 65.]
601     cord_individual_obj[indivial_i, :] = [10. 9. 73. 82.]
602     cord_individual_obj[indivial_i, :] = [11. 8. 54. 62.]
603     cord_individual_obj[indivial_i, :] = [12. 7. 114. 121.]
604     cord_individual_obj[indivial_i, :] = [13. 8. 126. 134.]
605     cord_individual_obj[indivial_i, :] = [14. 9. 93. 102.]
606     cord_individual_obj[indivial_i, :] = [15. 7. 68. 75.]
607     cord_individual_obj[indivial_i, :] = [16. 8. 139. 147.]
608     cord_individual_obj[indivial_i, :] = [17. 7. 164. 171.]
609     cord_individual_obj[indivial_i, :] = [18. 8. 101. 109.]
610     cord_individual_obj[indivial_i, :] = [19. 8. 97. 105.]
611     cord_individual_obj[indivial_i, :] = [20. 8. 101. 109.]
612     cord_individual_obj[indivial_i, :] = [21. 7. 77. 84.]
613     cord_individual_obj[indivial_i, :] = [22. 9. 173. 182.]
614     cord_individual_obj[indivial_i, :] = [23. 10. 79. 89.]
615     cord_individual_obj[indivial_i, :] = [24. 9. 143. 152.]
616
617     min(cord_individual_obj[:, 3]) = 62.0
618     historl_G_best_iter[iter, 3] = 62.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0. 10. 142. 152.]
623     cord_individual_obj[indivial_i, :] = [ 1. 9. 92. 101.]
624     cord_individual_obj[indivial_i, :] = [ 2. 8. 90. 98.]
625     cord_individual_obj[indivial_i, :] = [ 3. 8. 100. 108.]
626     cord_individual_obj[indivial_i, :] = [ 4. 9. 86. 95.]
627     cord_individual_obj[indivial_i, :] = [ 5. 8. 89. 97.]
628     cord_individual_obj[indivial_i, :] = [ 6. 9. 62. 71.]
629     cord_individual_obj[indivial_i, :] = [ 7. 9. 143. 152.]
630     cord_individual_obj[indivial_i, :] = [ 8. 8. 54. 62.]
631     cord_individual_obj[indivial_i, :] = [ 9. 7. 104. 111.]
632     cord_individual_obj[indivial_i, :] = [10. 11. 170. 181.]
633     cord_individual_obj[indivial_i, :] = [11. 8. 103. 111.]
634     cord_individual_obj[indivial_i, :] = [12. 9. 78. 87.]
635     cord_individual_obj[indivial_i, :] = [13. 10. 139. 149.]
636     cord_individual_obj[indivial_i, :] = [14. 11. 110. 121.]
637     cord_individual_obj[indivial_i, :] = [15. 9. 151. 160.]
638     cord_individual_obj[indivial_i, :] = [16. 9. 109. 118.]
639     cord_individual_obj[indivial_i, :] = [17. 9. 120. 129.]
640     cord_individual_obj[indivial_i, :] = [18. 9. 112. 121.]
641     cord_individual_obj[indivial_i, :] = [19. 10. 93. 103.]
642     cord_individual_obj[indivial_i, :] = [20. 8. 152. 160.]
643     cord_individual_obj[indivial_i, :] = [21. 8. 90. 98.]
644     cord_individual_obj[indivial_i, :] = [22. 9. 141. 150.]
645     cord_individual_obj[indivial_i, :] = [23. 9. 89. 98.]
646     cord_individual_obj[indivial_i, :] = [24. 8. 103. 111.]
647
648     min(cord_individual_obj[:, 3]) = 62.0
649     historl_G_best_iter[iter, 3] = 62.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0. 8. 89. 97.]
654     cord_individual_obj[indivial_i, :] = [ 1. 7. 100. 107.]
655     cord_individual_obj[indivial_i, :] = [ 2. 7. 142. 149.]
656     cord_individual_obj[indivial_i, :] = [ 3. 8. 101. 109.]
657     cord_individual_obj[indivial_i, :] = [ 4. 7. 115. 122.]
658     cord_individual_obj[indivial_i, :] = [ 5. 6. 122. 128.]
659     cord_individual_obj[indivial_i, :] = [ 6. 7. 84. 91.]
660     cord_individual_obj[indivial_i, :] = [ 7. 10. 75. 85.]
661     cord_individual_obj[indivial_i, :] = [ 8. 9. 76. 85.]
662     cord_individual_obj[indivial_i, :] = [ 9. 9. 113. 122.]
663     cord_individual_obj[indivial_i, :] = [10. 8. 54. 62.]
664     cord_individual_obj[indivial_i, :] = [11. 10. 101. 111.]
665     cord_individual_obj[indivial_i, :] = [12. 8. 96. 104.]
666     cord_individual_obj[indivial_i, :] = [13. 8. 112. 120.]
667     cord_individual_obj[indivial_i, :] = [14. 10. 115. 125.]
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668 cord_individual_obj[indivial_i,:] = [ 15. 8. 124. 132.]
669 cord_individual_obj[indivial_i,:] = [ 16. 8. 95. 103.]
670 cord_individual_obj[indivial_i,:] = [ 17. 8. 73. 81.]
671 cord_individual_obj[indivial_i,:] = [ 18. 9. 91. 100.]
672 cord_individual_obj[indivial_i,:] = [ 19. 10. 107. 117.]
673 cord_individual_obj[indivial_i,:] = [ 20. 9. 140. 149.]
674 cord_individual_obj[indivial_i,:] = [ 21. 8. 141. 149.]
675 cord_individual_obj[indivial_i,:] = [ 22. 10. 178. 188.]
676 cord_individual_obj[indivial_i,:] = [ 23. 8. 142. 150.]
677 cord_individual_obj[indivial_i,:] = [ 24. 9. 122. 131.]
678
679 min(cord_individual_obj[:, 3]) = 62.0
680 historl_G_best_iter[iter, 3] = 62.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 218.0
689 Proportion_of_area = 0.20185185185185187
690 BEST_CHROM =
691 berth: [17. 7. 16.5 9.5 17.5 17.5 8.5 27. 2.5 22.5 11.5 14.5 2.5 2.5
692 2. 25.5]
693 time: [0. 2. 6. 0. 3. 5. 5. 0. 0. 2. 2. 4. 5. 2. 4.]
694 num_QC: [3. 4. 3. 3. 3. 3. 4. 1. 2. 2. 2. 3. 4. 2. 3. 3.]
695 Objective function values and some other indicators:
696 Obj0 = 8.00          Obj1 = 54.00        Obj0 + Obj1 = 62.00
697 Total movement of crane: 14.00
698 Total waiting time in berth position: 40.00
699 Total index of q during berthing: 880.00
700 Specific arrangement for each vessel:
701 V_id: 0      li: 6.0           xi: 17.0           bow of i: 14.0           tail of i: 20.0           gama_i0: 0.0           gama_i1: 1
702 .0          gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
703 load_i: 80.0           work load gap_i: 0
704 V_id: 1      li: 6.0           xi: 7.0            bow of i: 4.0           tail of i: 10.0           gama_i0: 2.0           gama_i1: 3.0
705 .0          gama_i1 + 1: 4.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work load_i:
706 120.0           work load gap_i: 0
707 V_id: 2      li: 9.0           xi: 16.5           bow of i: 12.0           tail of i: 21.0           gama_i0: 6.0           gama_i1: 8
708 .0          gama_i1 + 1: 9.0   gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 160.0           work
709 load_i: 160.0           work load gap_i: 0
710 V_id: 3      li: 9.0           xi: 9.5            bow of i: 5.0           tail of i: 14.0           gama_i0: 0.0           gama_i1: 1.0
711 .0          gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work load_i:
712 80.0           work load gap_i: 0
713 V_id: 4      li: 9.0           xi: 17.5           bow of i: 13.0           tail of i: 22.0           gama_i0: 3.0           gama_i1: 4
714 .0          gama_i1 + 1: 5.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work
715 load_i: 100.0           work load gap_i: 0
716 V_id: 5      li: 9.0           xi: 17.5           bow of i: 13.0           tail of i: 22.0           gama_i0: 5.0           gama_i1: 5
717 .0          gama_i1 + 1: 6.0   gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work
718 load_i: 60.0           work load gap_i: 0
719 V_id: 6      li: 7.0           xi: 8.5            bow of i: 5.0           tail of i: 12.0           gama_i0: 5.0           gama_i1: 6.0
720 .0          gama_i1 + 1: 7.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work load_i:
721 load_i: 160.0           work load gap_i: 0
722 V_id: 7      li: 4.0           xi: 27.0           bow of i: 25.0           tail of i: 29.0           gama_i0: 0.0           gama_i1: 3
723 .0          gama_i1 + 1: 4.0   gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 80.0           work
724 load_i: 80.0           work load gap_i: 0
725 V_id: 8      li: 5.0           xi: 2.5            bow of i: 0.0           tail of i: 5.0           gama_i0: 0.0           gama_i1: 1.0
726 .0          gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work load_i:
727 load_i: 80.0           work load gap_i: 0
728 V_id: 9      li: 5.0           xi: 22.5           bow of i: 20.0           tail of i: 25.0           gama_i0: 0.0           gama_i1: 2
729 .0          gama_i1 + 1: 3.0   gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
730 load_i: 120.0           work load gap_i: 0
731 V_id: 10     li: 3.0           xi: 11.5           bow of i: 10.0           tail of i: 13.0           gama_i0: 2.0           gama_i1: 1
732 .0          gama_i1 + 1: 5.0   gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
733 load_i: 120.0           work load gap_i: 0
734 V_id: 11     li: 3.0           xi: 14.5            bow of i: 13.0           tail of i: 16.0           gama_i0: 2.0           gama_i1: 2
735 .0          gama_i1 + 1: 3.0   gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work
736 load_i: 60.0           work load gap_i: 0
737 V_id: 12     li: 5.0           xi: 2.5            bow of i: 0.0           tail of i: 5.0           gama_i0: 4.0           gama_i1: 4.0
738 .0          gama_i1 + 1: 5.0   gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 80.0           work load_i:
739 load_i: 80.0           work load gap_i: 0
740 V_id: 13     li: 5.0           xi: 2.5            bow of i: 0.0           tail of i: 5.0           gama_i0: 5.0           gama_i1: 6.0
741 .0          gama_i1 + 1: 7.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work load_i:
742 load_i: 80.0           work load gap_i: 0
743 V_id: 14     li: 4.0           xi: 2.0            bow of i: 0.0           tail of i: 4.0           gama_i0: 2.0           gama_i1: 3.0
744 .0          gama_i1 + 1: 4.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work load_i:
745 load_i: 120.0           work load gap_i: 0
746 V_id: 15     li: 7.0           xi: 25.5           bow of i: 22.0           tail of i: 29.0           gama_i0: 4.0           gama_i1: 1
747 .0          gama_i1 + 1: 7.0   gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 160.0           work
748 load_i: 160.0           work load gap_i: 0
749
750 Algorithm finished and the total CPU time: 499 s
751 End

```