

unknown

```

1 "E:\My_Python_Code\3_000001\1_00000000\1_LW_00002\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\pydeconsole.py" --mode=client --port=2411
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\My_Python_Code\3_000001\1_00000000\1_LW_00002\6_0000\2 python code\01_My_Python_Code', 'E:/1_000001\1_00000000\1_LW_00002\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_000001\1_00000000\1_LW_00002\6_0000\2 python code\01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1_000001\1_00000000\1_LW_00002\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_19_5_standerd_test.xlsx optimization process.
14
15 Start
16     Read basic data
17         V = 19
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     oder_type_num = 25
26         c1 = 1.5
27         c2 = 1.5
28     r1 = 0.06736249085604429
29     r2 = 0.06736249085604429
30 Begin iteration:
31
32 iter = 0
33     cord_individual_obj[individual_i, :] = [ 0. 11. 149. 160.]
34     cord_individual_obj[individual_i, :] = [ 1. 11. 140. 151.]
35     cord_individual_obj[individual_i, :] = [ 2. 10. 143. 153.]
36     cord_individual_obj[individual_i, :] = [ 3. 12. 121. 133.]
37     cord_individual_obj[individual_i, :] = [ 4. 13. 125. 138.]
38     cord_individual_obj[individual_i, :] = [ 5. 15. 157. 172.]
39     cord_individual_obj[individual_i, :] = [ 6. 12. 127. 139.]
40     cord_individual_obj[individual_i, :] = [ 7. 11. 168. 179.]
41     cord_individual_obj[individual_i, :] = [ 8. 12. 147. 159.]
42     cord_individual_obj[individual_i, :] = [ 9. 10. 159. 169.]
43     cord_individual_obj[individual_i, :] = [ 10. 10. 170. 180.]
44     cord_individual_obj[individual_i, :] = [ 11. 12. 134. 146.]
45     cord_individual_obj[individual_i, :] = [ 12. 13. 146. 159.]
46     cord_individual_obj[individual_i, :] = [ 13. 10. 131. 141.]
47     cord_individual_obj[individual_i, :] = [ 14. 15. 188. 203.]
48     cord_individual_obj[individual_i, :] = [ 15. 10. 116. 126.]
49     cord_individual_obj[individual_i, :] = [ 16. 12. 135. 147.]
50     cord_individual_obj[individual_i, :] = [ 17. 11. 139. 150.]
51     cord_individual_obj[individual_i, :] = [ 18. 13. 130. 143.]
52     cord_individual_obj[individual_i, :] = [ 19. 12. 146. 158.]
53     cord_individual_obj[individual_i, :] = [ 20. 15. 139. 154.]
54     cord_individual_obj[individual_i, :] = [ 21. 10. 169. 179.]
55     cord_individual_obj[individual_i, :] = [ 22. 12. 164. 176.]
56     cord_individual_obj[individual_i, :] = [ 23. 12. 153. 165.]
57     cord_individual_obj[individual_i, :] = [ 24. 11. 137. 148.]
58
59 min(cord_individual_obj[:, 3]) = 126.0
60 historl_G_best_iter[iter, 3] = 126.0
61 Begin iteration:
62
63 iter = 1
64     cord_individual_obj[individual_i, :] = [ 0. 11. 196. 207.]
65     cord_individual_obj[individual_i, :] = [ 1. 12. 213. 225.]
66     cord_individual_obj[individual_i, :] = [ 2. 12. 192. 204.]
67     cord_individual_obj[individual_i, :] = [ 3. 10. 246. 256.]
68     cord_individual_obj[individual_i, :] = [ 4. 14. 149. 163.]
69     cord_individual_obj[individual_i, :] = [ 5. 12. 168. 180.]
70     cord_individual_obj[individual_i, :] = [ 6. 10. 173. 183.]
71     cord_individual_obj[individual_i, :] = [ 7. 11. 120. 131.]
72     cord_individual_obj[individual_i, :] = [ 8. 13. 167. 180.]
73     cord_individual_obj[individual_i, :] = [ 9. 12. 167. 179.]
74     cord_individual_obj[individual_i, :] = [ 10. 11. 165. 176.]
75     cord_individual_obj[individual_i, :] = [ 11. 14. 182. 196.]
76     cord_individual_obj[individual_i, :] = [ 12. 11. 166. 177.]
77     cord_individual_obj[individual_i, :] = [ 13. 12. 165. 177.]
78     cord_individual_obj[individual_i, :] = [ 14. 10. 116. 126.]
79     cord_individual_obj[individual_i, :] = [ 15. 13. 207. 220.]

```

```

80 cord_individual_obj[indivial_i,:] = [ 16. 13. 115. 128.]
81 cord_individual_obj[indivial_i,:] = [ 17. 10. 159. 169.]
82 cord_individual_obj[indivial_i,:] = [ 18. 11. 184. 195.]
83 cord_individual_obj[indivial_i,:] = [ 19. 14. 192. 206.]
84 cord_individual_obj[indivial_i,:] = [ 20. 12. 160. 172.]
85 cord_individual_obj[indivial_i,:] = [ 21. 11. 153. 164.]
86 cord_individual_obj[indivial_i,:] = [ 22. 11. 163. 174.]
87 cord_individual_obj[indivial_i,:] = [ 23. 12. 213. 225.]
88 cord_individual_obj[indivial_i,:] = [ 24. 14. 198. 212.]
89
90 min(cord_individual_obj[:,3]) = 126.0
91 historl_G_best_iter[iter,3] = 126.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 13. 198. 211.]
96 cord_individual_obj[indivial_i,:] = [ 1. 12. 190. 202.]
97 cord_individual_obj[indivial_i,:] = [ 2. 11. 163. 174.]
98 cord_individual_obj[indivial_i,:] = [ 3. 10. 116. 126.]
99 cord_individual_obj[indivial_i,:] = [ 4. 13. 216. 229.]
100 cord_individual_obj[indivial_i,:] = [ 5. 15. 154. 169.]
101 cord_individual_obj[indivial_i,:] = [ 6. 11. 111. 122.]
102 cord_individual_obj[indivial_i,:] = [ 7. 14. 149. 163.]
103 cord_individual_obj[indivial_i,:] = [ 8. 14. 137. 151.]
104 cord_individual_obj[indivial_i,:] = [ 9. 12. 134. 146.]
105 cord_individual_obj[indivial_i,:] = [ 10. 10. 183. 193.]
106 cord_individual_obj[indivial_i,:] = [ 11. 14. 158. 172.]
107 cord_individual_obj[indivial_i,:] = [ 12. 13. 207. 220.]
108 cord_individual_obj[indivial_i,:] = [ 13. 13. 145. 158.]
109 cord_individual_obj[indivial_i,:] = [ 14. 11. 136. 147.]
110 cord_individual_obj[indivial_i,:] = [ 15. 12. 215. 227.]
111 cord_individual_obj[indivial_i,:] = [ 16. 10. 155. 165.]
112 cord_individual_obj[indivial_i,:] = [ 17. 11. 148. 159.]
113 cord_individual_obj[indivial_i,:] = [ 18. 14. 221. 235.]
114 cord_individual_obj[indivial_i,:] = [ 19. 12. 146. 158.]
115 cord_individual_obj[indivial_i,:] = [ 20. 12. 200. 212.]
116 cord_individual_obj[indivial_i,:] = [ 21. 13. 200. 213.]
117 cord_individual_obj[indivial_i,:] = [ 22. 12. 195. 207.]
118 cord_individual_obj[indivial_i,:] = [ 23. 11. 223. 234.]
119 cord_individual_obj[indivial_i,:] = [ 24. 12. 126. 138.]
120
121 min(cord_individual_obj[:,3]) = 122.0
122 historl_G_best_iter[iter,3] = 122.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 15. 199. 214.]
127 cord_individual_obj[indivial_i,:] = [ 1. 11. 143. 154.]
128 cord_individual_obj[indivial_i,:] = [ 2. 14. 159. 173.]
129 cord_individual_obj[indivial_i,:] = [ 3. 11. 152. 163.]
130 cord_individual_obj[indivial_i,:] = [ 4. 12. 156. 168.]
131 cord_individual_obj[indivial_i,:] = [ 5. 11. 118. 129.]
132 cord_individual_obj[indivial_i,:] = [ 6. 11. 142. 153.]
133 cord_individual_obj[indivial_i,:] = [ 7. 14. 148. 162.]
134 cord_individual_obj[indivial_i,:] = [ 8. 13. 177. 190.]
135 cord_individual_obj[indivial_i,:] = [ 9. 12. 166. 178.]
136 cord_individual_obj[indivial_i,:] = [ 10. 11. 160. 171.]
137 cord_individual_obj[indivial_i,:] = [ 11. 14. 171. 185.]
138 cord_individual_obj[indivial_i,:] = [ 12. 11. 169. 180.]
139 cord_individual_obj[indivial_i,:] = [ 13. 13. 132. 145.]
140 cord_individual_obj[indivial_i,:] = [ 14. 12. 172. 184.]
141 cord_individual_obj[indivial_i,:] = [ 15. 13. 143. 156.]
142 cord_individual_obj[indivial_i,:] = [ 16. 12. 208. 220.]
143 cord_individual_obj[indivial_i,:] = [ 17. 12. 119. 131.]
144 cord_individual_obj[indivial_i,:] = [ 18. 11. 111. 122.]
145 cord_individual_obj[indivial_i,:] = [ 19. 13. 202. 215.]
146 cord_individual_obj[indivial_i,:] = [ 20. 11. 146. 157.]
147 cord_individual_obj[indivial_i,:] = [ 21. 11. 181. 192.]
148 cord_individual_obj[indivial_i,:] = [ 22. 12. 142. 154.]
149 cord_individual_obj[indivial_i,:] = [ 23. 12. 135. 147.]
150 cord_individual_obj[indivial_i,:] = [ 24. 14. 202. 216.]
151
152 min(cord_individual_obj[:,3]) = 122.0
153 historl_G_best_iter[iter,3] = 122.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 15. 198. 213.]
158 cord_individual_obj[indivial_i,:] = [ 1. 11. 140. 151.]
159 cord_individual_obj[indivial_i,:] = [ 2. 14. 167. 181.]
160 cord_individual_obj[indivial_i,:] = [ 3. 13. 166. 179.]
161 cord_individual_obj[indivial_i,:] = [ 4. 13. 127. 140.]
162 cord_individual_obj[indivial_i,:] = [ 5. 10. 139. 149.]
163 cord_individual_obj[indivial_i,:] = [ 6. 11. 133. 144.]

```

```

164 cord_individual_obj[indivial_i, :] = [ 7. 12. 152. 164.]
165 cord_individual_obj[indivial_i, :] = [ 8. 11. 143. 154.]
166 cord_individual_obj[indivial_i, :] = [ 9. 11. 135. 146.]
167 cord_individual_obj[indivial_i, :] = [ 10. 10. 144. 154.]
168 cord_individual_obj[indivial_i, :] = [ 11. 12. 131. 143.]
169 cord_individual_obj[indivial_i, :] = [ 12. 13. 152. 165.]
170 cord_individual_obj[indivial_i, :] = [ 13. 13. 115. 128.]
171 cord_individual_obj[indivial_i, :] = [ 14. 11. 152. 163.]
172 cord_individual_obj[indivial_i, :] = [ 15. 13. 145. 158.]
173 cord_individual_obj[indivial_i, :] = [ 16. 11. 111. 122.]
174 cord_individual_obj[indivial_i, :] = [ 17. 12. 171. 183.]
175 cord_individual_obj[indivial_i, :] = [ 18. 13. 183. 196.]
176 cord_individual_obj[indivial_i, :] = [ 19. 12. 133. 145.]
177 cord_individual_obj[indivial_i, :] = [ 20. 12. 135. 147.]
178 cord_individual_obj[indivial_i, :] = [ 21. 11. 141. 152.]
179 cord_individual_obj[indivial_i, :] = [ 22. 12. 108. 120.]
180 cord_individual_obj[indivial_i, :] = [ 23. 12. 145. 157.]
181 cord_individual_obj[indivial_i, :] = [ 24. 11. 114. 125.]
182
183 min(cord_individual_obj[:, 3]) = 120.0
184 historl_G_best_iter[iter, 3] = 120.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 12. 108. 120.]
189 cord_individual_obj[indivial_i, :] = [ 1. 12. 131. 143.]
190 cord_individual_obj[indivial_i, :] = [ 2. 11. 102. 113.]
191 cord_individual_obj[indivial_i, :] = [ 3. 12. 144. 156.]
192 cord_individual_obj[indivial_i, :] = [ 4. 14. 183. 197.]
193 cord_individual_obj[indivial_i, :] = [ 5. 11. 140. 151.]
194 cord_individual_obj[indivial_i, :] = [ 6. 13. 129. 142.]
195 cord_individual_obj[indivial_i, :] = [ 7. 13. 127. 140.]
196 cord_individual_obj[indivial_i, :] = [ 8. 11. 135. 146.]
197 cord_individual_obj[indivial_i, :] = [ 9. 12. 155. 167.]
198 cord_individual_obj[indivial_i, :] = [ 10. 13. 138. 151.]
199 cord_individual_obj[indivial_i, :] = [ 11. 11. 138. 149.]
200 cord_individual_obj[indivial_i, :] = [ 12. 14. 219. 233.]
201 cord_individual_obj[indivial_i, :] = [ 13. 13. 162. 175.]
202 cord_individual_obj[indivial_i, :] = [ 14. 14. 128. 142.]
203 cord_individual_obj[indivial_i, :] = [ 15. 12. 159. 171.]
204 cord_individual_obj[indivial_i, :] = [ 16. 16. 184. 200.]
205 cord_individual_obj[indivial_i, :] = [ 17. 12. 154. 166.]
206 cord_individual_obj[indivial_i, :] = [ 18. 15. 152. 167.]
207 cord_individual_obj[indivial_i, :] = [ 19. 12. 148. 160.]
208 cord_individual_obj[indivial_i, :] = [ 20. 12. 152. 164.]
209 cord_individual_obj[indivial_i, :] = [ 21. 13. 161. 174.]
210 cord_individual_obj[indivial_i, :] = [ 22. 13. 133. 146.]
211 cord_individual_obj[indivial_i, :] = [ 23. 12. 142. 154.]
212 cord_individual_obj[indivial_i, :] = [ 24. 14. 165. 179.]
213
214 min(cord_individual_obj[:, 3]) = 113.0
215 historl_G_best_iter[iter, 3] = 113.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 11. 149. 160.]
220 cord_individual_obj[indivial_i, :] = [ 1. 13. 186. 199.]
221 cord_individual_obj[indivial_i, :] = [ 2. 10. 223. 233.]
222 cord_individual_obj[indivial_i, :] = [ 3. 13. 144. 157.]
223 cord_individual_obj[indivial_i, :] = [ 4. 11. 211. 222.]
224 cord_individual_obj[indivial_i, :] = [ 5. 14. 141. 155.]
225 cord_individual_obj[indivial_i, :] = [ 6. 11. 178. 189.]
226 cord_individual_obj[indivial_i, :] = [ 7. 13. 192. 205.]
227 cord_individual_obj[indivial_i, :] = [ 8. 12. 148. 160.]
228 cord_individual_obj[indivial_i, :] = [ 9. 11. 109. 120.]
229 cord_individual_obj[indivial_i, :] = [ 10. 14. 174. 188.]
230 cord_individual_obj[indivial_i, :] = [ 11. 10. 164. 174.]
231 cord_individual_obj[indivial_i, :] = [ 12. 11. 102. 113.]
232 cord_individual_obj[indivial_i, :] = [ 13. 13. 138. 151.]
233 cord_individual_obj[indivial_i, :] = [ 14. 11. 164. 175.]
234 cord_individual_obj[indivial_i, :] = [ 15. 15. 203. 218.]
235 cord_individual_obj[indivial_i, :] = [ 16. 14. 148. 162.]
236 cord_individual_obj[indivial_i, :] = [ 17. 10. 151. 161.]
237 cord_individual_obj[indivial_i, :] = [ 18. 13. 157. 170.]
238 cord_individual_obj[indivial_i, :] = [ 19. 14. 195. 209.]
239 cord_individual_obj[indivial_i, :] = [ 20. 11. 166. 177.]
240 cord_individual_obj[indivial_i, :] = [ 21. 12. 147. 159.]
241 cord_individual_obj[indivial_i, :] = [ 22. 11. 165. 176.]
242 cord_individual_obj[indivial_i, :] = [ 23. 12. 203. 215.]
243 cord_individual_obj[indivial_i, :] = [ 24. 12. 188. 200.]
244
245 min(cord_individual_obj[:, 3]) = 113.0
246 historl_G_best_iter[iter, 3] = 113.0
247 Begin iteration:

```

```

248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0. 11. 143. 154.]
251 cord_individual_obj[indivial_i, :] = [ 1. 11. 130. 141.]
252 cord_individual_obj[indivial_i, :] = [ 2. 11. 102. 113.]
253 cord_individual_obj[indivial_i, :] = [ 3. 11. 149. 160.]
254 cord_individual_obj[indivial_i, :] = [ 4. 13. 172. 185.]
255 cord_individual_obj[indivial_i, :] = [ 5. 12. 213. 225.]
256 cord_individual_obj[indivial_i, :] = [ 6. 10. 163. 173.]
257 cord_individual_obj[indivial_i, :] = [ 7. 11. 198. 209.]
258 cord_individual_obj[indivial_i, :] = [ 8. 12. 186. 198.]
259 cord_individual_obj[indivial_i, :] = [ 9. 10. 140. 150.]
260 cord_individual_obj[indivial_i, :] = [ 10. 11. 156. 167.]
261 cord_individual_obj[indivial_i, :] = [ 11. 11. 200. 211.]
262 cord_individual_obj[indivial_i, :] = [ 12. 10. 127. 137.]
263 cord_individual_obj[indivial_i, :] = [ 13. 10. 139. 149.]
264 cord_individual_obj[indivial_i, :] = [ 14. 10. 170. 180.]
265 cord_individual_obj[indivial_i, :] = [ 15. 11. 191. 202.]
266 cord_individual_obj[indivial_i, :] = [ 16. 13. 172. 185.]
267 cord_individual_obj[indivial_i, :] = [ 17. 11. 133. 144.]
268 cord_individual_obj[indivial_i, :] = [ 18. 13. 188. 201.]
269 cord_individual_obj[indivial_i, :] = [ 19. 12. 194. 206.]
270 cord_individual_obj[indivial_i, :] = [ 20. 13. 187. 200.]
271 cord_individual_obj[indivial_i, :] = [ 21. 11. 139. 150.]
272 cord_individual_obj[indivial_i, :] = [ 22. 12. 144. 156.]
273 cord_individual_obj[indivial_i, :] = [ 23. 11. 110. 121.]
274 cord_individual_obj[indivial_i, :] = [ 24. 13. 213. 226.]
275
276 min(cord_individual_obj[:, 3]) = 113.0
277 historl_G_best_iter[iter, 3] = 113.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0. 11. 135. 146.]
282 cord_individual_obj[indivial_i, :] = [ 1. 12. 151. 163.]
283 cord_individual_obj[indivial_i, :] = [ 2. 11. 183. 194.]
284 cord_individual_obj[indivial_i, :] = [ 3. 11. 179. 190.]
285 cord_individual_obj[indivial_i, :] = [ 4. 10. 188. 198.]
286 cord_individual_obj[indivial_i, :] = [ 5. 12. 129. 141.]
287 cord_individual_obj[indivial_i, :] = [ 6. 12. 135. 147.]
288 cord_individual_obj[indivial_i, :] = [ 7. 13. 154. 167.]
289 cord_individual_obj[indivial_i, :] = [ 8. 11. 180. 191.]
290 cord_individual_obj[indivial_i, :] = [ 9. 13. 198. 211.]
291 cord_individual_obj[indivial_i, :] = [ 10. 13. 134. 147.]
292 cord_individual_obj[indivial_i, :] = [ 11. 11. 136. 147.]
293 cord_individual_obj[indivial_i, :] = [ 12. 12. 142. 154.]
294 cord_individual_obj[indivial_i, :] = [ 13. 10. 148. 158.]
295 cord_individual_obj[indivial_i, :] = [ 14. 12. 159. 171.]
296 cord_individual_obj[indivial_i, :] = [ 15. 14. 115. 129.]
297 cord_individual_obj[indivial_i, :] = [ 16. 14. 133. 147.]
298 cord_individual_obj[indivial_i, :] = [ 17. 12. 168. 180.]
299 cord_individual_obj[indivial_i, :] = [ 18. 13. 151. 164.]
300 cord_individual_obj[indivial_i, :] = [ 19. 10. 167. 177.]
301 cord_individual_obj[indivial_i, :] = [ 20. 10. 166. 176.]
302 cord_individual_obj[indivial_i, :] = [ 21. 11. 174. 185.]
303 cord_individual_obj[indivial_i, :] = [ 22. 13. 145. 158.]
304 cord_individual_obj[indivial_i, :] = [ 23. 11. 176. 187.]
305 cord_individual_obj[indivial_i, :] = [ 24. 11. 102. 113.]
306
307 min(cord_individual_obj[:, 3]) = 113.0
308 historl_G_best_iter[iter, 3] = 113.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0. 12. 163. 175.]
313 cord_individual_obj[indivial_i, :] = [ 1. 10. 123. 133.]
314 cord_individual_obj[indivial_i, :] = [ 2. 12. 160. 172.]
315 cord_individual_obj[indivial_i, :] = [ 3. 13. 163. 176.]
316 cord_individual_obj[indivial_i, :] = [ 4. 12. 160. 172.]
317 cord_individual_obj[indivial_i, :] = [ 5. 14. 185. 199.]
318 cord_individual_obj[indivial_i, :] = [ 6. 11. 147. 158.]
319 cord_individual_obj[indivial_i, :] = [ 7. 13. 164. 177.]
320 cord_individual_obj[indivial_i, :] = [ 8. 11. 170. 181.]
321 cord_individual_obj[indivial_i, :] = [ 9. 11. 102. 113.]
322 cord_individual_obj[indivial_i, :] = [ 10. 12. 202. 214.]
323 cord_individual_obj[indivial_i, :] = [ 11. 10. 164. 174.]
324 cord_individual_obj[indivial_i, :] = [ 12. 13. 188. 201.]
325 cord_individual_obj[indivial_i, :] = [ 13. 10. 129. 139.]
326 cord_individual_obj[indivial_i, :] = [ 14. 11. 188. 199.]
327 cord_individual_obj[indivial_i, :] = [ 15. 14. 186. 200.]
328 cord_individual_obj[indivial_i, :] = [ 16. 13. 198. 211.]
329 cord_individual_obj[indivial_i, :] = [ 17. 12. 117. 129.]
330 cord_individual_obj[indivial_i, :] = [ 18. 12. 162. 174.]
331 cord_individual_obj[indivial_i, :] = [ 19. 11. 162. 173.]

```

unknown

```
332 cord_individual_obj[indivial_i, :] = [ 20. 10. 141. 151.]
333 cord_individual_obj[indivial_i, :] = [ 21. 11. 127. 138.]
334 cord_individual_obj[indivial_i, :] = [ 22. 14. 144. 158.]
335 cord_individual_obj[indivial_i, :] = [ 23. 12. 176. 188.]
336 cord_individual_obj[indivial_i, :] = [ 24. 11. 167. 178.]
337
338 min(cord_individual_obj[:, 3]) = 113.0
339 histol_G_best_iter[iter, 3] = 113.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i, :] = [ 0. 9. 161. 170.]
344 cord_individual_obj[indivial_i, :] = [ 1. 10. 235. 245.]
345 cord_individual_obj[indivial_i, :] = [ 2. 11. 182. 193.]
346 cord_individual_obj[indivial_i, :] = [ 3. 12. 180. 192.]
347 cord_individual_obj[indivial_i, :] = [ 4. 14. 184. 198.]
348 cord_individual_obj[indivial_i, :] = [ 5. 14. 210. 224.]
349 cord_individual_obj[indivial_i, :] = [ 6. 12. 141. 153.]
350 cord_individual_obj[indivial_i, :] = [ 7. 12. 153. 165.]
351 cord_individual_obj[indivial_i, :] = [ 8. 11. 131. 142.]
352 cord_individual_obj[indivial_i, :] = [ 9. 12. 150. 162.]
353 cord_individual_obj[indivial_i, :] = [ 10. 11. 102. 113.]
354 cord_individual_obj[indivial_i, :] = [ 11. 11. 185. 196.]
355 cord_individual_obj[indivial_i, :] = [ 12. 12. 133. 145.]
356 cord_individual_obj[indivial_i, :] = [ 13. 11. 151. 162.]
357 cord_individual_obj[indivial_i, :] = [ 14. 10. 152. 162.]
358 cord_individual_obj[indivial_i, :] = [ 15. 12. 137. 149.]
359 cord_individual_obj[indivial_i, :] = [ 16. 13. 231. 244.]
360 cord_individual_obj[indivial_i, :] = [ 17. 12. 140. 152.]
361 cord_individual_obj[indivial_i, :] = [ 18. 12. 191. 203.]
362 cord_individual_obj[indivial_i, :] = [ 19. 13. 183. 196.]
363 cord_individual_obj[indivial_i, :] = [ 20. 11. 103. 114.]
364 cord_individual_obj[indivial_i, :] = [ 21. 12. 179. 191.]
365 cord_individual_obj[indivial_i, :] = [ 22. 12. 209. 221.]
366 cord_individual_obj[indivial_i, :] = [ 23. 12. 181. 193.]
367 cord_individual_obj[indivial_i, :] = [ 24. 12. 157. 169.]
368
369 min(cord_individual_obj[:, 3]) = 113.0
370 histol_G_best_iter[iter, 3] = 113.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i, :] = [ 0. 10. 119. 129.]
375 cord_individual_obj[indivial_i, :] = [ 1. 11. 102. 113.]
376 cord_individual_obj[indivial_i, :] = [ 2. 11. 186. 197.]
377 cord_individual_obj[indivial_i, :] = [ 3. 13. 183. 196.]
378 cord_individual_obj[indivial_i, :] = [ 4. 13. 158. 171.]
379 cord_individual_obj[indivial_i, :] = [ 5. 11. 184. 195.]
380 cord_individual_obj[indivial_i, :] = [ 6. 10. 154. 164.]
381 cord_individual_obj[indivial_i, :] = [ 7. 10. 169. 179.]
382 cord_individual_obj[indivial_i, :] = [ 8. 10. 138. 148.]
383 cord_individual_obj[indivial_i, :] = [ 9. 11. 211. 222.]
384 cord_individual_obj[indivial_i, :] = [ 10. 10. 140. 150.]
385 cord_individual_obj[indivial_i, :] = [ 11. 12. 173. 185.]
386 cord_individual_obj[indivial_i, :] = [ 12. 10. 138. 148.]
387 cord_individual_obj[indivial_i, :] = [ 13. 9. 200. 209.]
388 cord_individual_obj[indivial_i, :] = [ 14. 12. 150. 162.]
389 cord_individual_obj[indivial_i, :] = [ 15. 13. 150. 163.]
390 cord_individual_obj[indivial_i, :] = [ 16. 12. 166. 178.]
391 cord_individual_obj[indivial_i, :] = [ 17. 11. 138. 149.]
392 cord_individual_obj[indivial_i, :] = [ 18. 12. 113. 125.]
393 cord_individual_obj[indivial_i, :] = [ 19. 10. 190. 200.]
394 cord_individual_obj[indivial_i, :] = [ 20. 12. 151. 163.]
395 cord_individual_obj[indivial_i, :] = [ 21. 11. 130. 141.]
396 cord_individual_obj[indivial_i, :] = [ 22. 11. 193. 204.]
397 cord_individual_obj[indivial_i, :] = [ 23. 11. 155. 166.]
398 cord_individual_obj[indivial_i, :] = [ 24. 14. 128. 142.]
399
400 min(cord_individual_obj[:, 3]) = 113.0
401 histol_G_best_iter[iter, 3] = 113.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i, :] = [ 0. 11. 148. 159.]
406 cord_individual_obj[indivial_i, :] = [ 1. 12. 150. 162.]
407 cord_individual_obj[indivial_i, :] = [ 2. 10. 181. 191.]
408 cord_individual_obj[indivial_i, :] = [ 3. 13. 131. 144.]
409 cord_individual_obj[indivial_i, :] = [ 4. 11. 151. 162.]
410 cord_individual_obj[indivial_i, :] = [ 5. 11. 154. 165.]
411 cord_individual_obj[indivial_i, :] = [ 6. 11. 136. 147.]
412 cord_individual_obj[indivial_i, :] = [ 7. 10. 186. 196.]
413 cord_individual_obj[indivial_i, :] = [ 8. 11. 172. 183.]
414 cord_individual_obj[indivial_i, :] = [ 9. 11. 102. 113.]
415 cord_individual_obj[indivial_i, :] = [ 10. 10. 165. 175.]
```

```

416 cord_individual_obj[indivial_i,:] = [ 11. 12. 144. 156.]
417 cord_individual_obj[indivial_i,:] = [ 12. 11. 185. 196.]
418 cord_individual_obj[indivial_i,:] = [ 13. 10. 212. 222.]
419 cord_individual_obj[indivial_i,:] = [ 14. 11. 161. 172.]
420 cord_individual_obj[indivial_i,:] = [ 15. 13. 181. 194.]
421 cord_individual_obj[indivial_i,:] = [ 16. 12. 186. 198.]
422 cord_individual_obj[indivial_i,:] = [ 17. 12. 133. 145.]
423 cord_individual_obj[indivial_i,:] = [ 18. 12. 131. 143.]
424 cord_individual_obj[indivial_i,:] = [ 19. 12. 139. 151.]
425 cord_individual_obj[indivial_i,:] = [ 20. 12. 145. 157.]
426 cord_individual_obj[indivial_i,:] = [ 21. 10. 127. 137.]
427 cord_individual_obj[indivial_i,:] = [ 22. 11. 151. 162.]
428 cord_individual_obj[indivial_i,:] = [ 23. 13. 154. 167.]
429 cord_individual_obj[indivial_i,:] = [ 24. 10. 154. 164.]
430
431 min(cord_individual_obj[:,3]) = 113.0
432 histol_G_best_iter[iter,3] = 113.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 13. 106. 119.]
437 cord_individual_obj[indivial_i,:] = [ 1. 11. 130. 141.]
438 cord_individual_obj[indivial_i,:] = [ 2. 11. 208. 219.]
439 cord_individual_obj[indivial_i,:] = [ 3. 14. 123. 137.]
440 cord_individual_obj[indivial_i,:] = [ 4. 11. 177. 188.]
441 cord_individual_obj[indivial_i,:] = [ 5. 14. 184. 198.]
442 cord_individual_obj[indivial_i,:] = [ 6. 10. 169. 179.]
443 cord_individual_obj[indivial_i,:] = [ 7. 11. 137. 148.]
444 cord_individual_obj[indivial_i,:] = [ 8. 13. 157. 170.]
445 cord_individual_obj[indivial_i,:] = [ 9. 11. 157. 168.]
446 cord_individual_obj[indivial_i,:] = [ 10. 12. 162. 174.]
447 cord_individual_obj[indivial_i,:] = [ 11. 12. 150. 162.]
448 cord_individual_obj[indivial_i,:] = [ 12. 13. 142. 155.]
449 cord_individual_obj[indivial_i,:] = [ 13. 11. 102. 113.]
450 cord_individual_obj[indivial_i,:] = [ 14. 13. 135. 148.]
451 cord_individual_obj[indivial_i,:] = [ 15. 12. 127. 139.]
452 cord_individual_obj[indivial_i,:] = [ 16. 15. 157. 172.]
453 cord_individual_obj[indivial_i,:] = [ 17. 11. 180. 191.]
454 cord_individual_obj[indivial_i,:] = [ 18. 14. 158. 172.]
455 cord_individual_obj[indivial_i,:] = [ 19. 12. 102. 114.]
456 cord_individual_obj[indivial_i,:] = [ 20. 11. 198. 209.]
457 cord_individual_obj[indivial_i,:] = [ 21. 12. 163. 175.]
458 cord_individual_obj[indivial_i,:] = [ 22. 13. 168. 181.]
459 cord_individual_obj[indivial_i,:] = [ 23. 11. 156. 167.]
460 cord_individual_obj[indivial_i,:] = [ 24. 12. 168. 180.]
461
462 min(cord_individual_obj[:,3]) = 113.0
463 histol_G_best_iter[iter,3] = 113.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 13. 122. 135.]
468 cord_individual_obj[indivial_i,:] = [ 1. 11. 180. 191.]
469 cord_individual_obj[indivial_i,:] = [ 2. 11. 102. 113.]
470 cord_individual_obj[indivial_i,:] = [ 3. 11. 150. 161.]
471 cord_individual_obj[indivial_i,:] = [ 4. 12. 140. 152.]
472 cord_individual_obj[indivial_i,:] = [ 5. 11. 156. 167.]
473 cord_individual_obj[indivial_i,:] = [ 6. 10. 153. 163.]
474 cord_individual_obj[indivial_i,:] = [ 7. 12. 168. 180.]
475 cord_individual_obj[indivial_i,:] = [ 8. 12. 145. 157.]
476 cord_individual_obj[indivial_i,:] = [ 9. 13. 210. 223.]
477 cord_individual_obj[indivial_i,:] = [ 10. 13. 159. 172.]
478 cord_individual_obj[indivial_i,:] = [ 11. 15. 162. 177.]
479 cord_individual_obj[indivial_i,:] = [ 12. 13. 207. 220.]
480 cord_individual_obj[indivial_i,:] = [ 13. 10. 182. 192.]
481 cord_individual_obj[indivial_i,:] = [ 14. 12. 175. 187.]
482 cord_individual_obj[indivial_i,:] = [ 15. 13. 145. 158.]
483 cord_individual_obj[indivial_i,:] = [ 16. 14. 174. 188.]
484 cord_individual_obj[indivial_i,:] = [ 17. 11. 229. 240.]
485 cord_individual_obj[indivial_i,:] = [ 18. 13. 197. 210.]
486 cord_individual_obj[indivial_i,:] = [ 19. 13. 170. 183.]
487 cord_individual_obj[indivial_i,:] = [ 20. 10. 132. 142.]
488 cord_individual_obj[indivial_i,:] = [ 21. 12. 219. 231.]
489 cord_individual_obj[indivial_i,:] = [ 22. 12. 175. 187.]
490 cord_individual_obj[indivial_i,:] = [ 23. 12. 160. 172.]
491 cord_individual_obj[indivial_i,:] = [ 24. 12. 145. 157.]
492
493 min(cord_individual_obj[:,3]) = 113.0
494 histol_G_best_iter[iter,3] = 113.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 11. 146. 157.]
499 cord_individual_obj[indivial_i,:] = [ 1. 10. 119. 129.]

```

```

500 cord_individual_obj[indivial_i, :] = [ 2. 11. 222. 233.]
501 cord_individual_obj[indivial_i, :] = [ 3. 10. 161. 171.]
502 cord_individual_obj[indivial_i, :] = [ 4. 12. 134. 146.]
503 cord_individual_obj[indivial_i, :] = [ 5. 14. 188. 202.]
504 cord_individual_obj[indivial_i, :] = [ 6. 11. 132. 143.]
505 cord_individual_obj[indivial_i, :] = [ 7. 11. 146. 157.]
506 cord_individual_obj[indivial_i, :] = [ 8. 13. 124. 137.]
507 cord_individual_obj[indivial_i, :] = [ 9. 10. 150. 160.]
508 cord_individual_obj[indivial_i, :] = [ 10. 15. 161. 176.]
509 cord_individual_obj[indivial_i, :] = [ 11. 11. 179. 190.]
510 cord_individual_obj[indivial_i, :] = [ 12. 13. 144. 157.]
511 cord_individual_obj[indivial_i, :] = [ 13. 14. 199. 213.]
512 cord_individual_obj[indivial_i, :] = [ 14. 11. 97. 108.]
513 cord_individual_obj[indivial_i, :] = [ 15. 13. 124. 137.]
514 cord_individual_obj[indivial_i, :] = [ 16. 14. 152. 166.]
515 cord_individual_obj[indivial_i, :] = [ 17. 11. 102. 113.]
516 cord_individual_obj[indivial_i, :] = [ 18. 13. 179. 192.]
517 cord_individual_obj[indivial_i, :] = [ 19. 12. 144. 156.]
518 cord_individual_obj[indivial_i, :] = [ 20. 10. 130. 140.]
519 cord_individual_obj[indivial_i, :] = [ 21. 13. 216. 229.]
520 cord_individual_obj[indivial_i, :] = [ 22. 13. 185. 198.]
521 cord_individual_obj[indivial_i, :] = [ 23. 11. 119. 130.]
522 cord_individual_obj[indivial_i, :] = [ 24. 13. 147. 160.]
523
524 min(cord_individual_obj[:, 3]) = 108.0
525 histol_G_best_iter[iter, 3] = 108.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [ 0. 11. 164. 175.]
530 cord_individual_obj[indivial_i, :] = [ 1. 14. 159. 173.]
531 cord_individual_obj[indivial_i, :] = [ 2. 11. 97. 108.]
532 cord_individual_obj[indivial_i, :] = [ 3. 14. 136. 150.]
533 cord_individual_obj[indivial_i, :] = [ 4. 11. 141. 152.]
534 cord_individual_obj[indivial_i, :] = [ 5. 14. 224. 238.]
535 cord_individual_obj[indivial_i, :] = [ 6. 13. 126. 139.]
536 cord_individual_obj[indivial_i, :] = [ 7. 13. 191. 204.]
537 cord_individual_obj[indivial_i, :] = [ 8. 13. 151. 164.]
538 cord_individual_obj[indivial_i, :] = [ 9. 11. 145. 156.]
539 cord_individual_obj[indivial_i, :] = [ 10. 13. 151. 164.]
540 cord_individual_obj[indivial_i, :] = [ 11. 10. 166. 176.]
541 cord_individual_obj[indivial_i, :] = [ 12. 12. 126. 138.]
542 cord_individual_obj[indivial_i, :] = [ 13. 12. 119. 131.]
543 cord_individual_obj[indivial_i, :] = [ 14. 11. 147. 158.]
544 cord_individual_obj[indivial_i, :] = [ 15. 13. 150. 163.]
545 cord_individual_obj[indivial_i, :] = [ 16. 15. 185. 200.]
546 cord_individual_obj[indivial_i, :] = [ 17. 10. 162. 172.]
547 cord_individual_obj[indivial_i, :] = [ 18. 12. 191. 203.]
548 cord_individual_obj[indivial_i, :] = [ 19. 11. 176. 187.]
549 cord_individual_obj[indivial_i, :] = [ 20. 12. 174. 186.]
550 cord_individual_obj[indivial_i, :] = [ 21. 13. 173. 186.]
551 cord_individual_obj[indivial_i, :] = [ 22. 11. 118. 129.]
552 cord_individual_obj[indivial_i, :] = [ 23. 12. 167. 179.]
553 cord_individual_obj[indivial_i, :] = [ 24. 11. 151. 162.]
554
555 min(cord_individual_obj[:, 3]) = 108.0
556 histol_G_best_iter[iter, 3] = 108.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [ 0. 10. 156. 166.]
561 cord_individual_obj[indivial_i, :] = [ 1. 12. 161. 173.]
562 cord_individual_obj[indivial_i, :] = [ 2. 11. 144. 155.]
563 cord_individual_obj[indivial_i, :] = [ 3. 13. 116. 129.]
564 cord_individual_obj[indivial_i, :] = [ 4. 12. 114. 126.]
565 cord_individual_obj[indivial_i, :] = [ 5. 11. 97. 108.]
566 cord_individual_obj[indivial_i, :] = [ 6. 9. 83. 92.]
567 cord_individual_obj[indivial_i, :] = [ 7. 11. 187. 198.]
568 cord_individual_obj[indivial_i, :] = [ 8. 11. 155. 166.]
569 cord_individual_obj[indivial_i, :] = [ 9. 11. 153. 164.]
570 cord_individual_obj[indivial_i, :] = [ 10. 11. 173. 184.]
571 cord_individual_obj[indivial_i, :] = [ 11. 11. 135. 146.]
572 cord_individual_obj[indivial_i, :] = [ 12. 12. 164. 176.]
573 cord_individual_obj[indivial_i, :] = [ 13. 11. 106. 117.]
574 cord_individual_obj[indivial_i, :] = [ 14. 11. 177. 188.]
575 cord_individual_obj[indivial_i, :] = [ 15. 11. 152. 163.]
576 cord_individual_obj[indivial_i, :] = [ 16. 13. 173. 186.]
577 cord_individual_obj[indivial_i, :] = [ 17. 10. 142. 152.]
578 cord_individual_obj[indivial_i, :] = [ 18. 11. 156. 167.]
579 cord_individual_obj[indivial_i, :] = [ 19. 12. 164. 176.]
580 cord_individual_obj[indivial_i, :] = [ 20. 11. 146. 157.]
581 cord_individual_obj[indivial_i, :] = [ 21. 13. 124. 137.]
582 cord_individual_obj[indivial_i, :] = [ 22. 13. 129. 142.]
583 cord_individual_obj[indivial_i, :] = [ 23. 11. 143. 154.]

```

```

584     cord_individual_obj[indivial_i, :] = [ 24. 10. 190. 200.]
585
586     min(cord_individual_obj[:, 3]) = 92.0
587     historl_G_best_iter[iter, 3] = 92.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0. 13. 200. 213.]
592     cord_individual_obj[indivial_i, :] = [ 1. 12. 175. 187.]
593     cord_individual_obj[indivial_i, :] = [ 2. 12. 216. 228.]
594     cord_individual_obj[indivial_i, :] = [ 3. 11. 120. 131.]
595     cord_individual_obj[indivial_i, :] = [ 4. 12. 154. 166.]
596     cord_individual_obj[indivial_i, :] = [ 5. 13. 136. 149.]
597     cord_individual_obj[indivial_i, :] = [ 6. 11. 138. 149.]
598     cord_individual_obj[indivial_i, :] = [ 7. 13. 163. 176.]
599     cord_individual_obj[indivial_i, :] = [ 8. 11. 156. 167.]
600     cord_individual_obj[indivial_i, :] = [ 9. 11. 167. 178.]
601     cord_individual_obj[indivial_i, :] = [ 10. 12. 138. 150.]
602     cord_individual_obj[indivial_i, :] = [ 11. 9. 185. 194.]
603     cord_individual_obj[indivial_i, :] = [ 12. 11. 163. 174.]
604     cord_individual_obj[indivial_i, :] = [ 13. 10. 137. 147.]
605     cord_individual_obj[indivial_i, :] = [ 14. 10. 138. 148.]
606     cord_individual_obj[indivial_i, :] = [ 15. 12. 186. 198.]
607     cord_individual_obj[indivial_i, :] = [ 16. 13. 141. 154.]
608     cord_individual_obj[indivial_i, :] = [ 17. 11. 155. 166.]
609     cord_individual_obj[indivial_i, :] = [ 18. 13. 135. 148.]
610     cord_individual_obj[indivial_i, :] = [ 19. 11. 205. 216.]
611     cord_individual_obj[indivial_i, :] = [ 20. 11. 169. 180.]
612     cord_individual_obj[indivial_i, :] = [ 21. 13. 148. 161.]
613     cord_individual_obj[indivial_i, :] = [ 22. 11. 142. 153.]
614     cord_individual_obj[indivial_i, :] = [ 23. 14. 206. 220.]
615     cord_individual_obj[indivial_i, :] = [ 24. 9. 83. 92.]
616
617     min(cord_individual_obj[:, 3]) = 92.0
618     historl_G_best_iter[iter, 3] = 92.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0. 13. 154. 167.]
623     cord_individual_obj[indivial_i, :] = [ 1. 12. 129. 141.]
624     cord_individual_obj[indivial_i, :] = [ 2. 9. 83. 92.]
625     cord_individual_obj[indivial_i, :] = [ 3. 13. 139. 152.]
626     cord_individual_obj[indivial_i, :] = [ 4. 11. 136. 147.]
627     cord_individual_obj[indivial_i, :] = [ 5. 12. 131. 143.]
628     cord_individual_obj[indivial_i, :] = [ 6. 13. 201. 214.]
629     cord_individual_obj[indivial_i, :] = [ 7. 13. 179. 192.]
630     cord_individual_obj[indivial_i, :] = [ 8. 12. 208. 220.]
631     cord_individual_obj[indivial_i, :] = [ 9. 11. 157. 168.]
632     cord_individual_obj[indivial_i, :] = [ 10. 10. 122. 132.]
633     cord_individual_obj[indivial_i, :] = [ 11. 13. 148. 161.]
634     cord_individual_obj[indivial_i, :] = [ 12. 12. 107. 119.]
635     cord_individual_obj[indivial_i, :] = [ 13. 11. 143. 154.]
636     cord_individual_obj[indivial_i, :] = [ 14. 10. 192. 202.]
637     cord_individual_obj[indivial_i, :] = [ 15. 13. 230. 243.]
638     cord_individual_obj[indivial_i, :] = [ 16. 15. 161. 176.]
639     cord_individual_obj[indivial_i, :] = [ 17. 10. 161. 171.]
640     cord_individual_obj[indivial_i, :] = [ 18. 13. 132. 145.]
641     cord_individual_obj[indivial_i, :] = [ 19. 11. 149. 160.]
642     cord_individual_obj[indivial_i, :] = [ 20. 10. 149. 159.]
643     cord_individual_obj[indivial_i, :] = [ 21. 13. 107. 120.]
644     cord_individual_obj[indivial_i, :] = [ 22. 12. 120. 132.]
645     cord_individual_obj[indivial_i, :] = [ 23. 12. 196. 208.]
646     cord_individual_obj[indivial_i, :] = [ 24. 10. 166. 176.]
647
648     min(cord_individual_obj[:, 3]) = 92.0
649     historl_G_best_iter[iter, 3] = 92.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0. 12. 173. 185.]
654     cord_individual_obj[indivial_i, :] = [ 1. 13. 169. 182.]
655     cord_individual_obj[indivial_i, :] = [ 2. 11. 150. 161.]
656     cord_individual_obj[indivial_i, :] = [ 3. 12. 162. 174.]
657     cord_individual_obj[indivial_i, :] = [ 4. 14. 182. 196.]
658     cord_individual_obj[indivial_i, :] = [ 5. 12. 163. 175.]
659     cord_individual_obj[indivial_i, :] = [ 6. 11. 160. 171.]
660     cord_individual_obj[indivial_i, :] = [ 7. 12. 143. 155.]
661     cord_individual_obj[indivial_i, :] = [ 8. 12. 138. 150.]
662     cord_individual_obj[indivial_i, :] = [ 9. 12. 169. 181.]
663     cord_individual_obj[indivial_i, :] = [ 10. 11. 163. 174.]
664     cord_individual_obj[indivial_i, :] = [ 11. 11. 109. 120.]
665     cord_individual_obj[indivial_i, :] = [ 12. 11. 128. 139.]
666     cord_individual_obj[indivial_i, :] = [ 13. 11. 142. 153.]
667     cord_individual_obj[indivial_i, :] = [ 14. 9. 108. 117.]

```

```

668 cord_individual_obj[indivial_i,:] = [15. 9. 83. 92.]
669 cord_individual_obj[indivial_i,:] = [16. 14. 144. 158.]
670 cord_individual_obj[indivial_i,:] = [17. 11. 154. 165.]
671 cord_individual_obj[indivial_i,:] = [18. 13. 176. 189.]
672 cord_individual_obj[indivial_i,:] = [19. 11. 129. 140.]
673 cord_individual_obj[indivial_i,:] = [20. 10. 179. 189.]
674 cord_individual_obj[indivial_i,:] = [21. 12. 178. 190.]
675 cord_individual_obj[indivial_i,:] = [22. 12. 144. 156.]
676 cord_individual_obj[indivial_i,:] = [23. 13. 170. 183.]
677 cord_individual_obj[indivial_i,:] = [24. 10. 167. 177.]
678
679 min(cord_individual_obj[:,3]) = 92.0
680 historl_G_best_iter[iter,3] = 92.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 266.0
689 Proportion_of_area = 0.2462962962962963
690 BEST_CHROM =
691 berth: [10. 15.5 4. 3. 3.5 15. 24. 24. 9.5 24.5 17.5 24.5 24. 3.
692 16.5 9.5 10.5 18.5 3.]
693 time: [4. 7. 7. 9. 4. 4. 3. 9. 1. 0. 0. 5. 7. 0. 3. 6. 0. 4. 2.]
694 num_QC: [4. 5. 3. 5. 3. 3. 4. 4. 3. 3. 2. 4. 4. 4. 4. 2. 5. 2. 6.]
695 Objective function values and some other indicators:
696 Obj0 = 9.00          Obj1 = 83.00        Obj0 + Obj1 = 92.00
697 Total movement of crane: 8.00
698 Total waiting time in berth position: 75.00
699 Total index of q during berthing: 1271.00
700 Specific arrangement for each vessel:
701 V_id: 0      li: 6.0           xi: 10.0           bow of i: 7.0           tail of i: 13.0           gama_i0: 4.0           gama_i1: 5
702 .0          gama_i1 + 1: 6.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0         work
703 load_i: 100.0           work load gap_i: 0
704 V_id: 1      li: 9.0           xi: 15.5           bow of i: 11.0           tail of i: 20.0           gama_i0: 7.0           gama_i1: 8
705 .0          gama_i1 + 1: 9.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0         work
706 load_i: 120.0           work load gap_i: 0
707 V_id: 2      li: 8.0           xi: 4.0            bow of i: 0.0           tail of i: 8.0            gama_i0: 7.0           gama_i1: 8.0
708 .0          gama_i1 + 1: 9.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0         work load_i:
709 100.0           work load gap_i: 0
710 V_id: 3      li: 6.0           xi: 3.0            bow of i: 0.0           tail of i: 6.0            gama_i0: 9.0           gama_i1: 9.0
711 .0          gama_i1 + 1: 10.0    gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 100.0         work
712 load_i: 100.0           work load gap_i: 0
713 V_id: 4      li: 7.0           xi: 3.5            bow of i: 0.0           tail of i: 7.0            gama_i0: 4.0           gama_i1: 6.0
714 .0          gama_i1 + 1: 7.0     gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 140.0         work load_i:
715 140.0           work load gap_i: 0
716 V_id: 5      li: 4.0           xi: 15.0           bow of i: 13.0           tail of i: 17.0           gama_i0: 4.0           gama_i1: 5
717 .0          gama_i1 + 1: 6.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0         work
718 load_i: 120.0           work load gap_i: 0
719 V_id: 6      li: 8.0           xi: 24.0           bow of i: 20.0           tail of i: 28.0           gama_i0: 3.0           gama_i1: 4
720 .0          gama_i1 + 1: 5.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0         work
721 load_i: 140.0           work load gap_i: 0
722 V_id: 7      li: 8.0           xi: 24.0           bow of i: 20.0           tail of i: 28.0           gama_i0: 9.0           gama_i1: 9
723 .0          gama_i1 + 1: 10.0    gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0          work
724 load_i: 60.0           work load gap_i: 0
725 V_id: 8      li: 7.0           xi: 9.5            bow of i: 6.0            tail of i: 13.0           gama_i0: 1.0           gama_i1: 3.0
726 .0          gama_i1 + 1: 4.0     gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 140.0         work load_i:
727 140.0           work load gap_i: 0
728 V_id: 9      li: 9.0           xi: 24.5           bow of i: 20.0           tail of i: 29.0           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: 160.0         work
730 load_i: 160.0           work load gap_i: 0
731 V_id: 10     li: 5.0           xi: 17.5           bow of i: 15.0           tail of i: 20.0           gama_i0: 0.0           gama_i1: 1
732 .0          gama_i1 + 1: 3.0     gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 100.0         work
733 load_i: 100.0           work load gap_i: 0
734 V_id: 11     li: 9.0           xi: 24.5           bow of i: 20.0           tail of i: 29.0           gama_i0: 5.0           gama_i1: 1
735 .0          gama_i1 + 1: 7.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0         work
736 load_i: 140.0           work load gap_i: 0
737 V_id: 12     li: 8.0           xi: 24.0           bow of i: 20.0           tail of i: 28.0           gama_i0: 7.0           gama_i1: 1
738 .0          gama_i1 + 1: 9.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0         work
739 load_i: 140.0           work load gap_i: 0
740 V_id: 13     li: 6.0           xi: 3.0            bow of i: 0.0           tail of i: 6.0            gama_i0: 0.0           gama_i1: 1.0
741 .0          gama_i1 + 1: 2.0     gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0         work load_i:
742 100.0           work load gap_i: 0
743 V_id: 14     li: 7.0           xi: 16.5           bow of i: 13.0           tail of i: 20.0           gama_i0: 3.0           gama_i1: 1
744 .0          gama_i1 + 1: 4.0     gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0          work
745 load_i: 60.0           work load gap_i: 0
746 V_id: 15     li: 3.0           xi: 9.5            bow of i: 8.0            tail of i: 11.0           gama_i0: 6.0           gama_i1: 8
747 .0          gama_i1 + 1: 9.0     gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0         work
748 load_i: 120.0           work load gap_i: 0
749 V_id: 16     li: 9.0           xi: 10.5           bow of i: 6.0            tail of i: 15.0           gama_i0: 0.0           gama_i1: 0
750 .0          gama_i1 + 1: 1.0     gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 100.0         work
751 load_i: 100.0           work load gap_i: 0

```

unknown

718	V_id: 17	li: 3.0	xi: 18.5	bow of i: 17.0	tail of i: 20.0	gama_i0: 4.0	gama_i1
	: 6.0	gama_i1 + 1: 7.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	work
	load_i: 120.0	work load gap_i: 0					
719	V_id: 18	li: 6.0	xi: 3.0	bow of i: 0.0	tail of i: 6.0	gama_i0: 2.0	gama_i1: 3.0
	gama_i1 + 1: 4.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0		demand_i: 160.0	work load_i:
	160.0	work load gap_i: 0					

720

721 Algorithm finished and the total CPU time: 496 s

722 End

723