

unknown

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80 cord_individual_obj[indivial_i, :] = [16. 2. 19. 21.]
81 cord_individual_obj[indivial_i, :] = [17. 2. 1. 3.]
82 cord_individual_obj[indivial_i, :] = [18. 2. 19. 21.]
83 cord_individual_obj[indivial_i, :] = [19. 3. 25. 28.]
84 cord_individual_obj[indivial_i, :] = [20. 3. 41. 44.]
85 cord_individual_obj[indivial_i, :] = [21. 2. 26. 28.]
86 cord_individual_obj[indivial_i, :] = [22. 1. 33. 34.]
87 cord_individual_obj[indivial_i, :] = [23. 2. 25. 27.]
88 cord_individual_obj[indivial_i, :] = [24. 3. 30. 33.]
89
90 min(cord_individual_obj[:, 3]) = 3.0
91 historl_G_best_iter[iter, 3] = 3.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
96 cord_individual_obj[indivial_i, :] = [1. 2. 1. 3.]
97 cord_individual_obj[indivial_i, :] = [2. 2. 1. 3.]
98 cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
99 cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
100 cord_individual_obj[indivial_i, :] = [5. 2. 1. 3.]
101 cord_individual_obj[indivial_i, :] = [6. 1. 1. 2.]
102 cord_individual_obj[indivial_i, :] = [7. 2. 13. 15.]
103 cord_individual_obj[indivial_i, :] = [8. 2. 1. 3.]
104 cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]
105 cord_individual_obj[indivial_i, :] = [10. 1. 1. 2.]
106 cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
107 cord_individual_obj[indivial_i, :] = [12. 2. 1. 3.]
108 cord_individual_obj[indivial_i, :] = [13. 2. 1. 3.]
109 cord_individual_obj[indivial_i, :] = [14. 2. 25. 27.]
110 cord_individual_obj[indivial_i, :] = [15. 2. 6. 8.]
111 cord_individual_obj[indivial_i, :] = [16. 2. 1. 3.]
112 cord_individual_obj[indivial_i, :] = [17. 2. 1. 3.]
113 cord_individual_obj[indivial_i, :] = [18. 1. 1. 2.]
114 cord_individual_obj[indivial_i, :] = [19. 2. 5. 7.]
115 cord_individual_obj[indivial_i, :] = [20. 3. 1. 4.]
116 cord_individual_obj[indivial_i, :] = [21. 2. 1. 3.]
117 cord_individual_obj[indivial_i, :] = [22. 2. 2. 4.]
118 cord_individual_obj[indivial_i, :] = [23. 2. 2. 4.]
119 cord_individual_obj[indivial_i, :] = [24. 2. 1. 3.]
120
121 min(cord_individual_obj[:, 3]) = 2.0
122 historl_G_best_iter[iter, 3] = 2.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
127 cord_individual_obj[indivial_i, :] = [1. 3. 1. 4.]
128 cord_individual_obj[indivial_i, :] = [2. 2. 1. 3.]
129 cord_individual_obj[indivial_i, :] = [3. 1. 1. 2.]
130 cord_individual_obj[indivial_i, :] = [4. 2. 2. 4.]
131 cord_individual_obj[indivial_i, :] = [5. 4. 6. 10.]
132 cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
133 cord_individual_obj[indivial_i, :] = [7. 3. 25. 28.]
134 cord_individual_obj[indivial_i, :] = [8. 2. 1. 3.]
135 cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]
136 cord_individual_obj[indivial_i, :] = [10. 1. 1. 2.]
137 cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
138 cord_individual_obj[indivial_i, :] = [12. 3. 1. 4.]
139 cord_individual_obj[indivial_i, :] = [13. 2. 1. 3.]
140 cord_individual_obj[indivial_i, :] = [14. 1. 1. 2.]
141 cord_individual_obj[indivial_i, :] = [15. 3. 6. 9.]
142 cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
143 cord_individual_obj[indivial_i, :] = [17. 1. 25. 26.]
144 cord_individual_obj[indivial_i, :] = [18. 2. 1. 3.]
145 cord_individual_obj[indivial_i, :] = [19. 3. 5. 8.]
146 cord_individual_obj[indivial_i, :] = [20. 2. 1. 3.]
147 cord_individual_obj[indivial_i, :] = [21. 2. 2. 4.]
148 cord_individual_obj[indivial_i, :] = [22. 2. 1. 3.]
149 cord_individual_obj[indivial_i, :] = [23. 2. 2. 4.]
150 cord_individual_obj[indivial_i, :] = [24. 3. 1. 4.]
151
152 min(cord_individual_obj[:, 3]) = 2.0
153 historl_G_best_iter[iter, 3] = 2.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i, :] = [0. 3. 1. 4.]
158 cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]
159 cord_individual_obj[indivial_i, :] = [2. 3. 2. 5.]
160 cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
161 cord_individual_obj[indivial_i, :] = [4. 2. 2. 4.]
162 cord_individual_obj[indivial_i, :] = [5. 3. 16. 19.]
163 cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]

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164 cord_individual_obj[indivial_i,:] = [7. 1. 1. 2.]
165 cord_individual_obj[indivial_i,:] = [8. 2. 1. 3.]
166 cord_individual_obj[indivial_i,:] = [9. 2. 2. 4.]
167 cord_individual_obj[indivial_i,:] = [10. 2. 1. 3.]
168 cord_individual_obj[indivial_i,:] = [11. 2. 2. 4.]
169 cord_individual_obj[indivial_i,:] = [12. 3. 1. 4.]
170 cord_individual_obj[indivial_i,:] = [13. 3. 1. 4.]
171 cord_individual_obj[indivial_i,:] = [14. 2. 2. 4.]
172 cord_individual_obj[indivial_i,:] = [15. 2. 31. 33.]
173 cord_individual_obj[indivial_i,:] = [16. 3. 2. 5.]
174 cord_individual_obj[indivial_i,:] = [17. 1. 25. 26.]
175 cord_individual_obj[indivial_i,:] = [18. 2. 2. 4.]
176 cord_individual_obj[indivial_i,:] = [19. 4. 6. 10.]
177 cord_individual_obj[indivial_i,:] = [20. 4. 2. 6.]
178 cord_individual_obj[indivial_i,:] = [21. 2. 2. 4.]
179 cord_individual_obj[indivial_i,:] = [22. 1. 1. 2.]
180 cord_individual_obj[indivial_i,:] = [23. 2. 1. 3.]
181 cord_individual_obj[indivial_i,:] = [24. 3. 1. 4.]
182
183 min(cord_individual_obj[:,3]) = 2.0
184 historl_G_best_iter[iter,3] = 2.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [0. 2. 1. 3.]
189 cord_individual_obj[indivial_i,:] = [1. 2. 1. 3.]
190 cord_individual_obj[indivial_i,:] = [2. 4. 2. 6.]
191 cord_individual_obj[indivial_i,:] = [3. 2. 2. 4.]
192 cord_individual_obj[indivial_i,:] = [4. 2. 1. 3.]
193 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
194 cord_individual_obj[indivial_i,:] = [6. 3. 1. 4.]
195 cord_individual_obj[indivial_i,:] = [7. 4. 6. 10.]
196 cord_individual_obj[indivial_i,:] = [8. 3. 3. 6.]
197 cord_individual_obj[indivial_i,:] = [9. 3. 1. 4.]
198 cord_individual_obj[indivial_i,:] = [10. 2. 1. 3.]
199 cord_individual_obj[indivial_i,:] = [11. 3. 2. 5.]
200 cord_individual_obj[indivial_i,:] = [12. 3. 1. 4.]
201 cord_individual_obj[indivial_i,:] = [13. 1. 1. 2.]
202 cord_individual_obj[indivial_i,:] = [14. 3. 1. 4.]
203 cord_individual_obj[indivial_i,:] = [15. 1. 1. 2.]
204 cord_individual_obj[indivial_i,:] = [16. 3. 2. 5.]
205 cord_individual_obj[indivial_i,:] = [17. 1. 31. 32.]
206 cord_individual_obj[indivial_i,:] = [18. 2. 2. 4.]
207 cord_individual_obj[indivial_i,:] = [19. 4. 3. 7.]
208 cord_individual_obj[indivial_i,:] = [20. 1. 1. 2.]
209 cord_individual_obj[indivial_i,:] = [21. 3. 2. 5.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 6. 9.]
211 cord_individual_obj[indivial_i,:] = [23. 2. 1. 3.]
212 cord_individual_obj[indivial_i,:] = [24. 3. 41. 44.]
213
214 min(cord_individual_obj[:,3]) = 2.0
215 historl_G_best_iter[iter,3] = 2.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [0. 2. 1. 3.]
220 cord_individual_obj[indivial_i,:] = [1. 3. 1. 4.]
221 cord_individual_obj[indivial_i,:] = [2. 3. 1. 4.]
222 cord_individual_obj[indivial_i,:] = [3. 2. 2. 4.]
223 cord_individual_obj[indivial_i,:] = [4. 1. 1. 2.]
224 cord_individual_obj[indivial_i,:] = [5. 4. 6. 10.]
225 cord_individual_obj[indivial_i,:] = [6. 2. 2. 4.]
226 cord_individual_obj[indivial_i,:] = [7. 4. 26. 30.]
227 cord_individual_obj[indivial_i,:] = [8. 1. 1. 2.]
228 cord_individual_obj[indivial_i,:] = [9. 2. 1. 3.]
229 cord_individual_obj[indivial_i,:] = [10. 2. 1. 3.]
230 cord_individual_obj[indivial_i,:] = [11. 2. 2. 4.]
231 cord_individual_obj[indivial_i,:] = [12. 4. 2. 6.]
232 cord_individual_obj[indivial_i,:] = [13. 1. 1. 2.]
233 cord_individual_obj[indivial_i,:] = [14. 1. 1. 2.]
234 cord_individual_obj[indivial_i,:] = [15. 1. 19. 20.]
235 cord_individual_obj[indivial_i,:] = [16. 3. 2. 5.]
236 cord_individual_obj[indivial_i,:] = [17. 1. 25. 26.]
237 cord_individual_obj[indivial_i,:] = [18. 2. 2. 4.]
238 cord_individual_obj[indivial_i,:] = [19. 3. 37. 40.]
239 cord_individual_obj[indivial_i,:] = [20. 3. 1. 4.]
240 cord_individual_obj[indivial_i,:] = [21. 2. 2. 4.]
241 cord_individual_obj[indivial_i,:] = [22. 2. 2. 4.]
242 cord_individual_obj[indivial_i,:] = [23. 1. 1. 2.]
243 cord_individual_obj[indivial_i,:] = [24. 1. 1. 2.]
244
245 min(cord_individual_obj[:,3]) = 2.0
246 historl_G_best_iter[iter,3] = 2.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
251 cord_individual_obj[indivial_i, :] = [1. 2. 1. 3.]
252 cord_individual_obj[indivial_i, :] = [2. 3. 1. 4.]
253 cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
254 cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
255 cord_individual_obj[indivial_i, :] = [5. 4. 3. 7.]
256 cord_individual_obj[indivial_i, :] = [6. 2. 2. 4.]
257 cord_individual_obj[indivial_i, :] = [7. 4. 6. 10.]
258 cord_individual_obj[indivial_i, :] = [8. 1. 1. 2.]
259 cord_individual_obj[indivial_i, :] = [9. 3. 1. 4.]
260 cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]
261 cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
262 cord_individual_obj[indivial_i, :] = [12. 4. 2. 6.]
263 cord_individual_obj[indivial_i, :] = [13. 1. 1. 2.]
264 cord_individual_obj[indivial_i, :] = [14. 1. 1. 2.]
265 cord_individual_obj[indivial_i, :] = [15. 2. 29. 31.]
266 cord_individual_obj[indivial_i, :] = [16. 2. 1. 3.]
267 cord_individual_obj[indivial_i, :] = [17. 1. 41. 42.]
268 cord_individual_obj[indivial_i, :] = [18. 2. 2. 4.]
269 cord_individual_obj[indivial_i, :] = [19. 1. 1. 2.]
270 cord_individual_obj[indivial_i, :] = [20. 3. 1. 4.]
271 cord_individual_obj[indivial_i, :] = [21. 2. 2. 4.]
272 cord_individual_obj[indivial_i, :] = [22. 2. 1. 3.]
273 cord_individual_obj[indivial_i, :] = [23. 2. 1. 3.]
274 cord_individual_obj[indivial_i, :] = [24. 3. 13. 16.]
275

276 min(cord_individual_obj[:, 3]) = 2.0
277 historl_G_best_iter[iter, 3] = 2.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [0. 2. 2. 4.]
282 cord_individual_obj[indivial_i, :] = [1. 1. 1. 2.]
283 cord_individual_obj[indivial_i, :] = [2. 1. 1. 2.]
284 cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
285 cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
286 cord_individual_obj[indivial_i, :] = [5. 3. 2. 5.]
287 cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
288 cord_individual_obj[indivial_i, :] = [7. 1. 1. 2.]
289 cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]
290 cord_individual_obj[indivial_i, :] = [9. 1. 1. 2.]
291 cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]
292 cord_individual_obj[indivial_i, :] = [11. 1. 1. 2.]
293 cord_individual_obj[indivial_i, :] = [12. 2. 1. 3.]
294 cord_individual_obj[indivial_i, :] = [13. 2. 1. 3.]
295 cord_individual_obj[indivial_i, :] = [14. 1. 1. 2.]
296 cord_individual_obj[indivial_i, :] = [15. 3. 2. 5.]
297 cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
298 cord_individual_obj[indivial_i, :] = [17. 1. 1. 2.]
299 cord_individual_obj[indivial_i, :] = [18. 2. 1. 3.]
300 cord_individual_obj[indivial_i, :] = [19. 2. 1. 3.]
301 cord_individual_obj[indivial_i, :] = [20. 2. 2. 4.]
302 cord_individual_obj[indivial_i, :] = [21. 2. 1. 3.]
303 cord_individual_obj[indivial_i, :] = [22. 3. 2. 5.]
304 cord_individual_obj[indivial_i, :] = [23. 2. 1. 3.]
305 cord_individual_obj[indivial_i, :] = [24. 2. 1. 3.]
306

307 min(cord_individual_obj[:, 3]) = 2.0
308 historl_G_best_iter[iter, 3] = 2.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [0. 3. 1. 4.]
313 cord_individual_obj[indivial_i, :] = [1. 3. 3. 6.]
314 cord_individual_obj[indivial_i, :] = [2. 2. 2. 4.]
315 cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
316 cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
317 cord_individual_obj[indivial_i, :] = [5. 1. 1. 2.]
318 cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
319 cord_individual_obj[indivial_i, :] = [7. 4. 6. 10.]
320 cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]
321 cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]
322 cord_individual_obj[indivial_i, :] = [10. 1. 1. 2.]
323 cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
324 cord_individual_obj[indivial_i, :] = [12. 4. 3. 7.]
325 cord_individual_obj[indivial_i, :] = [13. 3. 1. 4.]
326 cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]
327 cord_individual_obj[indivial_i, :] = [15. 3. 13. 16.]
328 cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
329 cord_individual_obj[indivial_i, :] = [17. 1. 1. 2.]
330 cord_individual_obj[indivial_i, :] = [18. 2. 1. 3.]
331 cord_individual_obj[indivial_i, :] = [19. 4. 12. 16.]

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332     cord_individual_obj[indivial_i, :] = [20. 1. 1. 2.]
333     cord_individual_obj[indivial_i, :] = [21. 1. 1. 2.]
334     cord_individual_obj[indivial_i, :] = [22. 4. 3. 7.]
335     cord_individual_obj[indivial_i, :] = [23. 2. 1. 3.]
336     cord_individual_obj[indivial_i, :] = [24. 3. 1. 4.]
337
338     min(cord_individual_obj[:, 3]) = 2.0
339     historl_G_best_iter[iter, 3] = 2.0
340 Begin iteration:
341
342 iter = 10
343     cord_individual_obj[indivial_i, :] = [0. 3. 1. 4.]
344     cord_individual_obj[indivial_i, :] = [1. 3. 3. 6.]
345     cord_individual_obj[indivial_i, :] = [2. 2. 2. 4.]
346     cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
347     cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
348     cord_individual_obj[indivial_i, :] = [5. 2. 2. 4.]
349     cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
350     cord_individual_obj[indivial_i, :] = [7. 4. 6. 10.]
351     cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]
352     cord_individual_obj[indivial_i, :] = [9. 2. 2. 4.]
353     cord_individual_obj[indivial_i, :] = [10. 1. 1. 2.]
354     cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
355     cord_individual_obj[indivial_i, :] = [12. 3. 2. 5.]
356     cord_individual_obj[indivial_i, :] = [13. 3. 1. 4.]
357     cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]
358     cord_individual_obj[indivial_i, :] = [15. 1. 1. 2.]
359     cord_individual_obj[indivial_i, :] = [16. 2. 1. 3.]
360     cord_individual_obj[indivial_i, :] = [17. 2. 1. 3.]
361     cord_individual_obj[indivial_i, :] = [18. 2. 1. 3.]
362     cord_individual_obj[indivial_i, :] = [19. 4. 12. 16.]
363     cord_individual_obj[indivial_i, :] = [20. 2. 2. 4.]
364     cord_individual_obj[indivial_i, :] = [21. 2. 1. 3.]
365     cord_individual_obj[indivial_i, :] = [22. 4. 3. 7.]
366     cord_individual_obj[indivial_i, :] = [23. 1. 1. 2.]
367     cord_individual_obj[indivial_i, :] = [24. 3. 1. 4.]
368
369     min(cord_individual_obj[:, 3]) = 2.0
370     historl_G_best_iter[iter, 3] = 2.0
371 Begin iteration:
372
373 iter = 11
374     cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
375     cord_individual_obj[indivial_i, :] = [1. 3. 3. 6.]
376     cord_individual_obj[indivial_i, :] = [2. 2. 2. 4.]
377     cord_individual_obj[indivial_i, :] = [3. 1. 1. 2.]
378     cord_individual_obj[indivial_i, :] = [4. 1. 1. 2.]
379     cord_individual_obj[indivial_i, :] = [5. 3. 3. 6.]
380     cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
381     cord_individual_obj[indivial_i, :] = [7. 3. 25. 28.]
382     cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]
383     cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]
384     cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]
385     cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
386     cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
387     cord_individual_obj[indivial_i, :] = [13. 1. 1. 2.]
388     cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]
389     cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
390     cord_individual_obj[indivial_i, :] = [16. 2. 2. 4.]
391     cord_individual_obj[indivial_i, :] = [17. 1. 25. 26.]
392     cord_individual_obj[indivial_i, :] = [18. 2. 1. 3.]
393     cord_individual_obj[indivial_i, :] = [19. 1. 1. 2.]
394     cord_individual_obj[indivial_i, :] = [20. 2. 2. 4.]
395     cord_individual_obj[indivial_i, :] = [21. 2. 1. 3.]
396     cord_individual_obj[indivial_i, :] = [22. 1. 1. 2.]
397     cord_individual_obj[indivial_i, :] = [23. 2. 2. 4.]
398     cord_individual_obj[indivial_i, :] = [24. 2. 2. 4.]
399
400     min(cord_individual_obj[:, 3]) = 2.0
401     historl_G_best_iter[iter, 3] = 2.0
402 Begin iteration:
403
404 iter = 12
405     cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
406     cord_individual_obj[indivial_i, :] = [1. 2. 2. 4.]
407     cord_individual_obj[indivial_i, :] = [2. 2. 2. 4.]
408     cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]
409     cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]
410     cord_individual_obj[indivial_i, :] = [5. 2. 2. 4.]
411     cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]
412     cord_individual_obj[indivial_i, :] = [7. 1. 1. 2.]
413     cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]
414     cord_individual_obj[indivial_i, :] = [9. 2. 2. 4.]
415     cord_individual_obj[indivial_i, :] = [10. 2. 2. 4.]

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```

416 cord_individual_obj[indivial_i,:] = [11. 1. 1. 2.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
418 cord_individual_obj[indivial_i,:] = [13. 2. 1. 3.]
419 cord_individual_obj[indivial_i,:] = [14. 2. 1. 3.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 2. 5.]
421 cord_individual_obj[indivial_i,:] = [16. 2. 2. 4.]
422 cord_individual_obj[indivial_i,:] = [17. 1. 1. 2.]
423 cord_individual_obj[indivial_i,:] = [18. 2. 1. 3.]
424 cord_individual_obj[indivial_i,:] = [19. 3. 11. 14.]
425 cord_individual_obj[indivial_i,:] = [20. 1. 1. 2.]
426 cord_individual_obj[indivial_i,:] = [21. 2. 1. 3.]
427 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
428 cord_individual_obj[indivial_i,:] = [23. 2. 2. 4.]
429 cord_individual_obj[indivial_i,:] = [24. 3. 3. 6.]
430
431 min(cord_individual_obj[:,3]) = 2.0
432 histol_G_best_iter[iter,3] = 2.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [0. 3. 1. 4.]
437 cord_individual_obj[indivial_i,:] = [1. 2. 2. 4.]
438 cord_individual_obj[indivial_i,:] = [2. 2. 2. 4.]
439 cord_individual_obj[indivial_i,:] = [3. 2. 1. 3.]
440 cord_individual_obj[indivial_i,:] = [4. 2. 1. 3.]
441 cord_individual_obj[indivial_i,:] = [5. 2. 2. 4.]
442 cord_individual_obj[indivial_i,:] = [6. 2. 1. 3.]
443 cord_individual_obj[indivial_i,:] = [7. 3. 1. 4.]
444 cord_individual_obj[indivial_i,:] = [8. 2. 2. 4.]
445 cord_individual_obj[indivial_i,:] = [9. 2. 1. 3.]
446 cord_individual_obj[indivial_i,:] = [10. 2. 1. 3.]
447 cord_individual_obj[indivial_i,:] = [11. 2. 1. 3.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 2. 5.]
449 cord_individual_obj[indivial_i,:] = [13. 2. 1. 3.]
450 cord_individual_obj[indivial_i,:] = [14. 2. 1. 3.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 2. 5.]
452 cord_individual_obj[indivial_i,:] = [16. 2. 2. 4.]
453 cord_individual_obj[indivial_i,:] = [17. 1. 1. 2.]
454 cord_individual_obj[indivial_i,:] = [18. 2. 1. 3.]
455 cord_individual_obj[indivial_i,:] = [19. 1. 1. 2.]
456 cord_individual_obj[indivial_i,:] = [20. 2. 2. 4.]
457 cord_individual_obj[indivial_i,:] = [21. 2. 1. 3.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
459 cord_individual_obj[indivial_i,:] = [23. 2. 2. 4.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 3. 6.]
461
462 min(cord_individual_obj[:,3]) = 2.0
463 histol_G_best_iter[iter,3] = 2.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 3. 3. 6.]
468 cord_individual_obj[indivial_i,:] = [1. 1. 1. 2.]
469 cord_individual_obj[indivial_i,:] = [2. 1. 13. 14.]
470 cord_individual_obj[indivial_i,:] = [3. 1. 1. 2.]
471 cord_individual_obj[indivial_i,:] = [4. 1. 1. 2.]
472 cord_individual_obj[indivial_i,:] = [5. 2. 1. 3.]
473 cord_individual_obj[indivial_i,:] = [6. 2. 1. 3.]
474 cord_individual_obj[indivial_i,:] = [7. 1. 13. 14.]
475 cord_individual_obj[indivial_i,:] = [8. 2. 1. 3.]
476 cord_individual_obj[indivial_i,:] = [9. 1. 1. 2.]
477 cord_individual_obj[indivial_i,:] = [10. 2. 1. 3.]
478 cord_individual_obj[indivial_i,:] = [11. 1. 1. 2.]
479 cord_individual_obj[indivial_i,:] = [12. 2. 1. 3.]
480 cord_individual_obj[indivial_i,:] = [13. 1. 1. 2.]
481 cord_individual_obj[indivial_i,:] = [14. 1. 1. 2.]
482 cord_individual_obj[indivial_i,:] = [15. 4. 14. 18.]
483 cord_individual_obj[indivial_i,:] = [16. 2. 6. 8.]
484 cord_individual_obj[indivial_i,:] = [17. 3. 13. 16.]
485 cord_individual_obj[indivial_i,:] = [18. 2. 1. 3.]
486 cord_individual_obj[indivial_i,:] = [19. 2. 13. 15.]
487 cord_individual_obj[indivial_i,:] = [20. 2. 1. 3.]
488 cord_individual_obj[indivial_i,:] = [21. 2. 1. 3.]
489 cord_individual_obj[indivial_i,:] = [22. 2. 1. 3.]
490 cord_individual_obj[indivial_i,:] = [23. 2. 1. 3.]
491 cord_individual_obj[indivial_i,:] = [24. 1. 1. 2.]
492
493 min(cord_individual_obj[:,3]) = 2.0
494 histol_G_best_iter[iter,3] = 2.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [0. 3. 2. 5.]
499 cord_individual_obj[indivial_i,:] = [1. 3. 1. 4.]

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500 cord_individual_obj[indivial_i, :] = [2, 2, 5, 7.]
501 cord_individual_obj[indivial_i, :] = [3, 2, 2, 4.]
502 cord_individual_obj[indivial_i, :] = [4, 2, 2, 4.]
503 cord_individual_obj[indivial_i, :] = [5, 4, 6, 10.]
504 cord_individual_obj[indivial_i, :] = [6, 2, 2, 4.]
505 cord_individual_obj[indivial_i, :] = [7, 5, 7, 12.]
506 cord_individual_obj[indivial_i, :] = [8, 2, 1, 3.]
507 cord_individual_obj[indivial_i, :] = [9, 2, 1, 3.]
508 cord_individual_obj[indivial_i, :] = [10, 2, 1, 3.]
509 cord_individual_obj[indivial_i, :] = [11, 2, 1, 3.]
510 cord_individual_obj[indivial_i, :] = [12, 4, 2, 6.]
511 cord_individual_obj[indivial_i, :] = [13, 3, 1, 4.]
512 cord_individual_obj[indivial_i, :] = [14, 2, 1, 3.]
513 cord_individual_obj[indivial_i, :] = [15, 1, 1, 2.]
514 cord_individual_obj[indivial_i, :] = [16, 2, 1, 3.]
515 cord_individual_obj[indivial_i, :] = [17, 3, 6, 9.]
516 cord_individual_obj[indivial_i, :] = [18, 2, 1, 3.]
517 cord_individual_obj[indivial_i, :] = [19, 4, 13, 17.]
518 cord_individual_obj[indivial_i, :] = [20, 1, 1, 2.]
519 cord_individual_obj[indivial_i, :] = [21, 2, 2, 4.]
520 cord_individual_obj[indivial_i, :] = [22, 3, 2, 5.]
521 cord_individual_obj[indivial_i, :] = [23, 1, 1, 2.]
522 cord_individual_obj[indivial_i, :] = [24, 2, 41, 43.]
523
524 min(cord_individual_obj[:, 3]) = 2.0
525 histort_G_best_iter[iter, 3] = 2.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [0, 2, 1, 3.]
530 cord_individual_obj[indivial_i, :] = [1, 2, 1, 3.]
531 cord_individual_obj[indivial_i, :] = [2, 2, 1, 3.]
532 cord_individual_obj[indivial_i, :] = [3, 1, 1, 2.]
533 cord_individual_obj[indivial_i, :] = [4, 2, 1, 3.]
534 cord_individual_obj[indivial_i, :] = [5, 2, 1, 3.]
535 cord_individual_obj[indivial_i, :] = [6, 2, 1, 3.]
536 cord_individual_obj[indivial_i, :] = [7, 2, 13, 15.]
537 cord_individual_obj[indivial_i, :] = [8, 2, 1, 3.]
538 cord_individual_obj[indivial_i, :] = [9, 1, 1, 2.]
539 cord_individual_obj[indivial_i, :] = [10, 1, 1, 2.]
540 cord_individual_obj[indivial_i, :] = [11, 1, 1, 2.]
541 cord_individual_obj[indivial_i, :] = [12, 2, 1, 3.]
542 cord_individual_obj[indivial_i, :] = [13, 2, 1, 3.]
543 cord_individual_obj[indivial_i, :] = [14, 1, 1, 2.]
544 cord_individual_obj[indivial_i, :] = [15, 2, 6, 8.]
545 cord_individual_obj[indivial_i, :] = [16, 2, 2, 4.]
546 cord_individual_obj[indivial_i, :] = [17, 1, 13, 14.]
547 cord_individual_obj[indivial_i, :] = [18, 1, 1, 2.]
548 cord_individual_obj[indivial_i, :] = [19, 2, 1, 3.]
549 cord_individual_obj[indivial_i, :] = [20, 3, 1, 4.]
550 cord_individual_obj[indivial_i, :] = [21, 2, 1, 3.]
551 cord_individual_obj[indivial_i, :] = [22, 2, 2, 4.]
552 cord_individual_obj[indivial_i, :] = [23, 1, 1, 2.]
553 cord_individual_obj[indivial_i, :] = [24, 1, 1, 2.]
554
555 min(cord_individual_obj[:, 3]) = 2.0
556 histort_G_best_iter[iter, 3] = 2.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [0, 3, 1, 4.]
561 cord_individual_obj[indivial_i, :] = [1, 2, 1, 3.]
562 cord_individual_obj[indivial_i, :] = [2, 3, 1, 4.]
563 cord_individual_obj[indivial_i, :] = [3, 1, 1, 2.]
564 cord_individual_obj[indivial_i, :] = [4, 3, 2, 5.]
565 cord_individual_obj[indivial_i, :] = [5, 3, 13, 16.]
566 cord_individual_obj[indivial_i, :] = [6, 2, 2, 4.]
567 cord_individual_obj[indivial_i, :] = [7, 1, 1, 2.]
568 cord_individual_obj[indivial_i, :] = [8, 2, 2, 4.]
569 cord_individual_obj[indivial_i, :] = [9, 3, 1, 4.]
570 cord_individual_obj[indivial_i, :] = [10, 2, 1, 3.]
571 cord_individual_obj[indivial_i, :] = [11, 2, 1, 3.]
572 cord_individual_obj[indivial_i, :] = [12, 3, 1, 4.]
573 cord_individual_obj[indivial_i, :] = [13, 2, 1, 3.]
574 cord_individual_obj[indivial_i, :] = [14, 2, 1, 3.]
575 cord_individual_obj[indivial_i, :] = [15, 2, 5, 7.]
576 cord_individual_obj[indivial_i, :] = [16, 2, 2, 4.]
577 cord_individual_obj[indivial_i, :] = [17, 3, 15, 18.]
578 cord_individual_obj[indivial_i, :] = [18, 2, 1, 3.]
579 cord_individual_obj[indivial_i, :] = [19, 3, 12, 15.]
580 cord_individual_obj[indivial_i, :] = [20, 2, 1, 3.]
581 cord_individual_obj[indivial_i, :] = [21, 2, 1, 3.]
582 cord_individual_obj[indivial_i, :] = [22, 3, 2, 5.]
583 cord_individual_obj[indivial_i, :] = [23, 2, 1, 3.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 3. 25. 28.]  
585  
586     min(cord_individual_obj[:, 3]) = 2.0  
587     historl_G_best_iter[iter, 3] = 2.0  
588 Begin iteration:  
589 iter = 18  
591     cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]  
592     cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]  
593     cord_individual_obj[indivial_i, :] = [2. 2. 2. 4.]  
594     cord_individual_obj[indivial_i, :] = [3. 2. 1. 3.]  
595     cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]  
596     cord_individual_obj[indivial_i, :] = [5. 3. 16. 19.]  
597     cord_individual_obj[indivial_i, :] = [6. 2. 2. 4.]  
598     cord_individual_obj[indivial_i, :] = [7. 4. 14. 18.]  
599     cord_individual_obj[indivial_i, :] = [8. 2. 2. 4.]  
600     cord_individual_obj[indivial_i, :] = [9. 3. 1. 4.]  
601     cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]  
602     cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]  
603     cord_individual_obj[indivial_i, :] = [12. 2. 1. 3.]  
604     cord_individual_obj[indivial_i, :] = [13. 2. 1. 3.]  
605     cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]  
606     cord_individual_obj[indivial_i, :] = [15. 2. 25. 27.]  
607     cord_individual_obj[indivial_i, :] = [16. 2. 1. 3.]  
608     cord_individual_obj[indivial_i, :] = [17. 1. 25. 26.]  
609     cord_individual_obj[indivial_i, :] = [18. 2. 2. 4.]  
610     cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]  
611     cord_individual_obj[indivial_i, :] = [20. 4. 2. 6.]  
612     cord_individual_obj[indivial_i, :] = [21. 2. 2. 4.]  
613     cord_individual_obj[indivial_i, :] = [22. 2. 6. 8.]  
614     cord_individual_obj[indivial_i, :] = [23. 2. 1. 3.]  
615     cord_individual_obj[indivial_i, :] = [24. 1. 1. 2.]  
616  
617     min(cord_individual_obj[:, 3]) = 2.0  
618     historl_G_best_iter[iter, 3] = 2.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [0. 3. 1. 4.]  
623     cord_individual_obj[indivial_i, :] = [1. 3. 1. 4.]  
624     cord_individual_obj[indivial_i, :] = [2. 2. 1. 3.]  
625     cord_individual_obj[indivial_i, :] = [3. 2. 2. 4.]  
626     cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]  
627     cord_individual_obj[indivial_i, :] = [5. 4. 6. 10.]  
628     cord_individual_obj[indivial_i, :] = [6. 2. 2. 4.]  
629     cord_individual_obj[indivial_i, :] = [7. 4. 6. 10.]  
630     cord_individual_obj[indivial_i, :] = [8. 2. 1. 3.]  
631     cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]  
632     cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]  
633     cord_individual_obj[indivial_i, :] = [11. 2. 2. 4.]  
634     cord_individual_obj[indivial_i, :] = [12. 3. 1. 4.]  
635     cord_individual_obj[indivial_i, :] = [13. 3. 1. 4.]  
636     cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]  
637     cord_individual_obj[indivial_i, :] = [15. 1. 1. 2.]  
638     cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]  
639     cord_individual_obj[indivial_i, :] = [17. 1. 25. 26.]  
640     cord_individual_obj[indivial_i, :] = [18. 2. 2. 4.]  
641     cord_individual_obj[indivial_i, :] = [19. 4. 6. 10.]  
642     cord_individual_obj[indivial_i, :] = [20. 3. 1. 4.]  
643     cord_individual_obj[indivial_i, :] = [21. 2. 2. 4.]  
644     cord_individual_obj[indivial_i, :] = [22. 2. 2. 4.]  
645     cord_individual_obj[indivial_i, :] = [23. 2. 1. 3.]  
646     cord_individual_obj[indivial_i, :] = [24. 3. 1. 4.]  
647  
648     min(cord_individual_obj[:, 3]) = 2.0  
649     historl_G_best_iter[iter, 3] = 2.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [0. 3. 1. 4.]  
654     cord_individual_obj[indivial_i, :] = [1. 3. 1. 4.]  
655     cord_individual_obj[indivial_i, :] = [2. 2. 1. 3.]  
656     cord_individual_obj[indivial_i, :] = [3. 2. 2. 4.]  
657     cord_individual_obj[indivial_i, :] = [4. 1. 1. 2.]  
658     cord_individual_obj[indivial_i, :] = [5. 3. 16. 19.]  
659     cord_individual_obj[indivial_i, :] = [6. 2. 1. 3.]  
660     cord_individual_obj[indivial_i, :] = [7. 4. 14. 18.]  
661     cord_individual_obj[indivial_i, :] = [8. 2. 1. 3.]  
662     cord_individual_obj[indivial_i, :] = [9. 2. 1. 3.]  
663     cord_individual_obj[indivial_i, :] = [10. 2. 1. 3.]  
664     cord_individual_obj[indivial_i, :] = [11. 2. 2. 4.]  
665     cord_individual_obj[indivial_i, :] = [12. 2. 1. 3.]  
666     cord_individual_obj[indivial_i, :] = [13. 3. 1. 4.]  
667     cord_individual_obj[indivial_i, :] = [14. 2. 1. 3.]
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unknown

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668 cord_individual_obj[individual_i, :] = [15. 2. 31. 33.]
669 cord_individual_obj[individual_i, :] = [16. 3. 2. 5.]
670 cord_individual_obj[individual_i, :] = [17. 1. 1. 2.]
671 cord_individual_obj[individual_i, :] = [18. 2. 2. 4.]
672 cord_individual_obj[individual_i, :] = [19. 4. 6. 10.]
673 cord_individual_obj[individual_i, :] = [20. 3. 1. 4.]
674 cord_individual_obj[individual_i, :] = [21. 2. 2. 4.]
675 cord_individual_obj[individual_i, :] = [22. 2. 1. 3.]
676 cord_individual_obj[individual_i, :] = [23. 2. 1. 3.]
677 cord_individual_obj[individual_i, :] = [24. 3. 1. 4.]
678
679 min(cord_individual_obj[:, 3]) = 2.0
680 historl_G_best_iter[iter, 3] = 2.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 63.0
689 Proportion_of_area = 0.05833333333333333334
690 BEST_CHROM =
691 berth: [14.5 2. 7. 21. 23.5]
692 time: [0. 0. 0. 1. 0.]
693 num_QC: [4. 4. 5. 3. 4.]
694 Objective function values and some other indicators:
695 Obj0 = 1.00          Obj1 = 1.00          Obj0 + Obj1 = 2.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 1.00
698 Total index of q during berthing: 267.00
699 Specific arrangement for each vessel:
700 V_id: 0           li: 9.0           xi: 14.5           bow of i: 10.0           tail of i: 19.0           gama_i0: 0.0           gama_i1: 1.0
    .0           gama_i1 + 1: 2.0           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
701 V_id: 1           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           gama_i0: 0.0           gama_i1: 0.0
    .0           gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work load_i:
60.0           work load gap_i: 0
702 V_id: 2           li: 6.0           xi: 7.0           bow of i: 4.0           tail of i: 10.0           gama_i0: 0.0           gama_i1: 0.0
    .0           gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 100.0           work load_i:
100.0           work load gap_i: 0
703 V_id: 3           li: 4.0           xi: 21.0           bow of i: 19.0           tail of i: 23.0           gama_i0: 1.0           gama_i1: 1.0
    .0           gama_i1 + 1: 2.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work
load_i: 60.0           work load gap_i: 0
704 V_id: 4           li: 9.0           xi: 23.5           bow of i: 19.0           tail of i: 28.0           gama_i0: 0.0           gama_i1: 0.0
    .0           gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 80.0           work
load_i: 80.0           work load gap_i: 0
705
706 Algorithm finished and the total CPU time: 135 s
707 End
708

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