

unknown

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80 cord_individual_obj[indivial_i, :] = [16. 3. 5. 8.]
81 cord_individual_obj[indivial_i, :] = [17. 4. 93. 97.]
82 cord_individual_obj[indivial_i, :] = [18. 2. 55. 57.]
83 cord_individual_obj[indivial_i, :] = [19. 3. 72. 75.]
84 cord_individual_obj[indivial_i, :] = [20. 3. 77. 80.]
85 cord_individual_obj[indivial_i, :] = [21. 3. 55. 58.]
86 cord_individual_obj[indivial_i, :] = [22. 3. 48. 51.]
87 cord_individual_obj[indivial_i, :] = [23. 3. 57. 60.]
88 cord_individual_obj[indivial_i, :] = [24. 3. 36. 39.]
89
90 min(cord_individual_obj[:, 3]) = 8.0
91 historl_G_best_iter[iter, 3] = 8.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i, :] = [ 0. 4. 50. 54.]
96 cord_individual_obj[indivial_i, :] = [ 1. 3. 67. 70.]
97 cord_individual_obj[indivial_i, :] = [ 2. 4. 33. 37.]
98 cord_individual_obj[indivial_i, :] = [ 3. 3. 63. 66.]
99 cord_individual_obj[indivial_i, :] = [ 4. 3. 12. 15.]
100 cord_individual_obj[indivial_i, :] = [ 5. 5. 23. 28.]
101 cord_individual_obj[indivial_i, :] = [ 6. 4. 65. 69.]
102 cord_individual_obj[indivial_i, :] = [ 7. 6. 30. 36.]
103 cord_individual_obj[indivial_i, :] = [ 8. 5. 16. 21.]
104 cord_individual_obj[indivial_i, :] = [ 9. 6. 45. 51.]
105 cord_individual_obj[indivial_i, :] = [10. 4. 12. 16.]
106 cord_individual_obj[indivial_i, :] = [11. 4. 138. 142.]
107 cord_individual_obj[indivial_i, :] = [12. 3. 50. 53.]
108 cord_individual_obj[indivial_i, :] = [13. 5. 48. 53.]
109 cord_individual_obj[indivial_i, :] = [14. 3. 5. 8.]
110 cord_individual_obj[indivial_i, :] = [15. 3. 72. 75.]
111 cord_individual_obj[indivial_i, :] = [16. 3. 30. 33.]
112 cord_individual_obj[indivial_i, :] = [17. 4. 82. 86.]
113 cord_individual_obj[indivial_i, :] = [18. 5. 49. 54.]
114 cord_individual_obj[indivial_i, :] = [19. 4. 133. 137.]
115 cord_individual_obj[indivial_i, :] = [20. 3. 67. 70.]
116 cord_individual_obj[indivial_i, :] = [21. 4. 70. 74.]
117 cord_individual_obj[indivial_i, :] = [22. 4. 27. 31.]
118 cord_individual_obj[indivial_i, :] = [23. 3. 57. 60.]
119 cord_individual_obj[indivial_i, :] = [24. 4. 17. 21.]
120
121 min(cord_individual_obj[:, 3]) = 8.0
122 historl_G_best_iter[iter, 3] = 8.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i, :] = [ 0. 4. 69. 73.]
127 cord_individual_obj[indivial_i, :] = [ 1. 3. 140. 143.]
128 cord_individual_obj[indivial_i, :] = [ 2. 4. 27. 31.]
129 cord_individual_obj[indivial_i, :] = [ 3. 3. 73. 76.]
130 cord_individual_obj[indivial_i, :] = [ 4. 3. 22. 25.]
131 cord_individual_obj[indivial_i, :] = [ 5. 3. 58. 61.]
132 cord_individual_obj[indivial_i, :] = [ 6. 4. 52. 56.]
133 cord_individual_obj[indivial_i, :] = [ 7. 4. 31. 35.]
134 cord_individual_obj[indivial_i, :] = [ 8. 3. 69. 72.]
135 cord_individual_obj[indivial_i, :] = [ 9. 5. 9. 14.]
136 cord_individual_obj[indivial_i, :] = [10. 5. 5. 10.]
137 cord_individual_obj[indivial_i, :] = [11. 3. 5. 8.]
138 cord_individual_obj[indivial_i, :] = [12. 4. 27. 31.]
139 cord_individual_obj[indivial_i, :] = [13. 3. 42. 45.]
140 cord_individual_obj[indivial_i, :] = [14. 3. 125. 128.]
141 cord_individual_obj[indivial_i, :] = [15. 3. 30. 33.]
142 cord_individual_obj[indivial_i, :] = [16. 4. 45. 49.]
143 cord_individual_obj[indivial_i, :] = [17. 3. 75. 78.]
144 cord_individual_obj[indivial_i, :] = [18. 3. 75. 78.]
145 cord_individual_obj[indivial_i, :] = [19. 4. 27. 31.]
146 cord_individual_obj[indivial_i, :] = [20. 4. 49. 53.]
147 cord_individual_obj[indivial_i, :] = [21. 4. 18. 22.]
148 cord_individual_obj[indivial_i, :] = [22. 4. 58. 62.]
149 cord_individual_obj[indivial_i, :] = [23. 3. 50. 53.]
150 cord_individual_obj[indivial_i, :] = [24. 3. 29. 32.]
151
152 min(cord_individual_obj[:, 3]) = 8.0
153 historl_G_best_iter[iter, 3] = 8.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i, :] = [ 0. 3. 56. 59.]
158 cord_individual_obj[indivial_i, :] = [ 1. 3. 5. 8.]
159 cord_individual_obj[indivial_i, :] = [ 2. 3. 55. 58.]
160 cord_individual_obj[indivial_i, :] = [ 3. 3. 52. 55.]
161 cord_individual_obj[indivial_i, :] = [ 4. 2. 59. 61.]
162 cord_individual_obj[indivial_i, :] = [ 5. 6. 74. 80.]
163 cord_individual_obj[indivial_i, :] = [ 6. 4. 93. 97.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 5. 69. 74.]
165 cord_individual_obj[indivial_i, :] = [ 8. 4. 42. 46.]
166 cord_individual_obj[indivial_i, :] = [ 9. 3. 66. 69.]
167 cord_individual_obj[indivial_i, :] = [10. 4. 93. 97.]
168 cord_individual_obj[indivial_i, :] = [11. 5. 58. 63.]
169 cord_individual_obj[indivial_i, :] = [12. 3. 97. 100.]
170 cord_individual_obj[indivial_i, :] = [13. 4. 131. 135.]
171 cord_individual_obj[indivial_i, :] = [14. 3. 84. 87.]
172 cord_individual_obj[indivial_i, :] = [15. 4. 63. 67.]
173 cord_individual_obj[indivial_i, :] = [16. 4. 22. 26.]
174 cord_individual_obj[indivial_i, :] = [17. 3. 78. 81.]
175 cord_individual_obj[indivial_i, :] = [18. 3. 53. 56.]
176 cord_individual_obj[indivial_i, :] = [19. 4. 116. 120.]
177 cord_individual_obj[indivial_i, :] = [20. 4. 59. 63.]
178 cord_individual_obj[indivial_i, :] = [21. 4. 53. 57.]
179 cord_individual_obj[indivial_i, :] = [22. 3. 48. 51.]
180 cord_individual_obj[indivial_i, :] = [23. 4. 57. 61.]
181 cord_individual_obj[indivial_i, :] = [24. 4. 73. 77.]
182
183 min(cord_individual_obj[:, 3]) = 8.0
184 historl_G_best_iter[iter, 3] = 8.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 3. 45. 48.]
189 cord_individual_obj[indivial_i, :] = [ 1. 3. 84. 87.]
190 cord_individual_obj[indivial_i, :] = [ 2. 5. 23. 28.]
191 cord_individual_obj[indivial_i, :] = [ 3. 4. 49. 53.]
192 cord_individual_obj[indivial_i, :] = [ 4. 4. 16. 20.]
193 cord_individual_obj[indivial_i, :] = [ 5. 5. 24. 29.]
194 cord_individual_obj[indivial_i, :] = [ 6. 3. 34. 37.]
195 cord_individual_obj[indivial_i, :] = [ 7. 4. 71. 75.]
196 cord_individual_obj[indivial_i, :] = [ 8. 5. 98. 103.]
197 cord_individual_obj[indivial_i, :] = [ 9. 6. 11. 17.]
198 cord_individual_obj[indivial_i, :] = [10. 6. 23. 29.]
199 cord_individual_obj[indivial_i, :] = [11. 4. 54. 58.]
200 cord_individual_obj[indivial_i, :] = [12. 4. 71. 75.]
201 cord_individual_obj[indivial_i, :] = [13. 3. 5. 8.]
202 cord_individual_obj[indivial_i, :] = [14. 3. 94. 97.]
203 cord_individual_obj[indivial_i, :] = [15. 3. 45. 48.]
204 cord_individual_obj[indivial_i, :] = [16. 3. 12. 15.]
205 cord_individual_obj[indivial_i, :] = [17. 6. 54. 60.]
206 cord_individual_obj[indivial_i, :] = [18. 4. 91. 95.]
207 cord_individual_obj[indivial_i, :] = [19. 2. 3. 5.]
208 cord_individual_obj[indivial_i, :] = [20. 3. 121. 124.]
209 cord_individual_obj[indivial_i, :] = [21. 2. 82. 84.]
210 cord_individual_obj[indivial_i, :] = [22. 5. 73. 78.]
211 cord_individual_obj[indivial_i, :] = [23. 3. 86. 89.]
212 cord_individual_obj[indivial_i, :] = [24. 3. 66. 69.]
213
214 min(cord_individual_obj[:, 3]) = 5.0
215 historl_G_best_iter[iter, 3] = 5.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 4. 39. 43.]
220 cord_individual_obj[indivial_i, :] = [ 1. 3. 36. 39.]
221 cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
222 cord_individual_obj[indivial_i, :] = [ 3. 4. 68. 72.]
223 cord_individual_obj[indivial_i, :] = [ 4. 3. 28. 31.]
224 cord_individual_obj[indivial_i, :] = [ 5. 4. 59. 63.]
225 cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
226 cord_individual_obj[indivial_i, :] = [ 7. 4. 29. 33.]
227 cord_individual_obj[indivial_i, :] = [ 8. 4. 37. 41.]
228 cord_individual_obj[indivial_i, :] = [ 9. 4. 67. 71.]
229 cord_individual_obj[indivial_i, :] = [10. 4. 43. 47.]
230 cord_individual_obj[indivial_i, :] = [11. 4. 47. 51.]
231 cord_individual_obj[indivial_i, :] = [12. 5. 34. 39.]
232 cord_individual_obj[indivial_i, :] = [13. 5. 23. 28.]
233 cord_individual_obj[indivial_i, :] = [14. 5. 71. 76.]
234 cord_individual_obj[indivial_i, :] = [15. 4. 91. 95.]
235 cord_individual_obj[indivial_i, :] = [16. 3. 50. 53.]
236 cord_individual_obj[indivial_i, :] = [17. 4. 35. 39.]
237 cord_individual_obj[indivial_i, :] = [18. 4. 135. 139.]
238 cord_individual_obj[indivial_i, :] = [19. 3. 40. 43.]
239 cord_individual_obj[indivial_i, :] = [20. 2. 3. 5.]
240 cord_individual_obj[indivial_i, :] = [21. 4. 128. 132.]
241 cord_individual_obj[indivial_i, :] = [22. 4. 33. 37.]
242 cord_individual_obj[indivial_i, :] = [23. 3. 76. 79.]
243 cord_individual_obj[indivial_i, :] = [24. 3. 72. 75.]
244
245 min(cord_individual_obj[:, 3]) = 5.0
246 historl_G_best_iter[iter, 3] = 5.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  3. 46. 49.]
251 cord_individual_obj[indivial_i, :] = [ 1.  3. 123. 126.]
252 cord_individual_obj[indivial_i, :] = [ 2.  4.  8. 12.]
253 cord_individual_obj[indivial_i, :] = [ 3.  3. 23. 26.]
254 cord_individual_obj[indivial_i, :] = [ 4.  3. 72. 75.]
255 cord_individual_obj[indivial_i, :] = [ 5.  4. 16. 20.]
256 cord_individual_obj[indivial_i, :] = [ 6.  4. 38. 42.]
257 cord_individual_obj[indivial_i, :] = [ 7.  4. 74. 78.]
258 cord_individual_obj[indivial_i, :] = [ 8.  4. 31. 35.]
259 cord_individual_obj[indivial_i, :] = [ 9.  5. 46. 51.]
260 cord_individual_obj[indivial_i, :] = [10.  5. 21. 26.]
261 cord_individual_obj[indivial_i, :] = [11.  3. 76. 79.]
262 cord_individual_obj[indivial_i, :] = [12.  4. 44. 48.]
263 cord_individual_obj[indivial_i, :] = [13.  4. 57. 61.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 70. 74.]
265 cord_individual_obj[indivial_i, :] = [15.  4. 44. 48.]
266 cord_individual_obj[indivial_i, :] = [16.  6. 22. 28.]
267 cord_individual_obj[indivial_i, :] = [17.  3. 58. 61.]
268 cord_individual_obj[indivial_i, :] = [18.  2.  3. 5.]
269 cord_individual_obj[indivial_i, :] = [19.  3. 75. 78.]
270 cord_individual_obj[indivial_i, :] = [20.  3. 27. 30.]
271 cord_individual_obj[indivial_i, :] = [21.  4. 100. 104.]
272 cord_individual_obj[indivial_i, :] = [22.  3. 35. 38.]
273 cord_individual_obj[indivial_i, :] = [23.  3. 92. 95.]
274 cord_individual_obj[indivial_i, :] = [24.  4. 76. 80.]
275

276 min(cord_individual_obj[:, 3]) = 5.0
277 historl_G_best_iter[iter, 3] = 5.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  4. 37. 41.]
282 cord_individual_obj[indivial_i, :] = [1.  2. 3. 5.]
283 cord_individual_obj[indivial_i, :] = [ 2.  4. 67. 71.]
284 cord_individual_obj[indivial_i, :] = [ 3.  3. 53. 56.]
285 cord_individual_obj[indivial_i, :] = [ 4.  4. 69. 73.]
286 cord_individual_obj[indivial_i, :] = [ 5.  5. 34. 39.]
287 cord_individual_obj[indivial_i, :] = [ 6.  4. 34. 38.]
288 cord_individual_obj[indivial_i, :] = [ 7.  5. 12. 17.]
289 cord_individual_obj[indivial_i, :] = [ 8.  5. 34. 39.]
290 cord_individual_obj[indivial_i, :] = [ 9.  4. 93. 97.]
291 cord_individual_obj[indivial_i, :] = [10.  4. 34. 38.]
292 cord_individual_obj[indivial_i, :] = [11.  3. 64. 67.]
293 cord_individual_obj[indivial_i, :] = [12.  4. 61. 65.]
294 cord_individual_obj[indivial_i, :] = [13.  5. 72. 77.]
295 cord_individual_obj[indivial_i, :] = [14.  3. 99. 102.]
296 cord_individual_obj[indivial_i, :] = [15.  3. 68. 71.]
297 cord_individual_obj[indivial_i, :] = [16.  5. 59. 64.]
298 cord_individual_obj[indivial_i, :] = [17.  4. 49. 53.]
299 cord_individual_obj[indivial_i, :] = [18.  3. 19. 22.]
300 cord_individual_obj[indivial_i, :] = [19.  5. 34. 39.]
301 cord_individual_obj[indivial_i, :] = [20.  4. 80. 84.]
302 cord_individual_obj[indivial_i, :] = [21.  4. 61. 65.]
303 cord_individual_obj[indivial_i, :] = [22.  4. 75. 79.]
304 cord_individual_obj[indivial_i, :] = [23.  4. 115. 119.]
305 cord_individual_obj[indivial_i, :] = [24.  3. 135. 138.]
306

307 min(cord_individual_obj[:, 3]) = 5.0
308 historl_G_best_iter[iter, 3] = 5.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  3. 29. 32.]
313 cord_individual_obj[indivial_i, :] = [ 1.  3. 60. 63.]
314 cord_individual_obj[indivial_i, :] = [ 2.  3. 62. 65.]
315 cord_individual_obj[indivial_i, :] = [ 3.  3. 53. 56.]
316 cord_individual_obj[indivial_i, :] = [ 4.  3. 68. 71.]
317 cord_individual_obj[indivial_i, :] = [ 5.  4. 54. 58.]
318 cord_individual_obj[indivial_i, :] = [ 6.  4. 15. 19.]
319 cord_individual_obj[indivial_i, :] = [ 7.  4. 50. 54.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 34. 38.]
321 cord_individual_obj[indivial_i, :] = [ 9.  3. 53. 56.]
322 cord_individual_obj[indivial_i, :] = [10.  5. 17. 22.]
323 cord_individual_obj[indivial_i, :] = [11.  5. 50. 55.]
324 cord_individual_obj[indivial_i, :] = [12.  4. 60. 64.]
325 cord_individual_obj[indivial_i, :] = [13.  5. 45. 50.]
326 cord_individual_obj[indivial_i, :] = [14.  4. 74. 78.]
327 cord_individual_obj[indivial_i, :] = [15.  4. 61. 65.]
328 cord_individual_obj[indivial_i, :] = [16.  5. 22. 27.]
329 cord_individual_obj[indivial_i, :] = [17.  3. 54. 57.]
330 cord_individual_obj[indivial_i, :] = [18.  3. 49. 52.]
331 cord_individual_obj[indivial_i, :] = [19.  3. 34. 37.]

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unknown

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332     cord_individual_obj[indivial_i,:] = [20. 3. 27. 30.]  
333     cord_individual_obj[indivial_i,:] = [21. 3. 62. 65.]  
334     cord_individual_obj[indivial_i,:] = [22. 4. 65. 69.]  
335     cord_individual_obj[indivial_i,:] = [23. 3. 99. 102.]  
336     cord_individual_obj[indivial_i,:] = [24. 2. 3. 5.]  
337  
338 min(cord_individual_obj[:,3]) = 5.0  
339 histol_G_best_iter[iter,3] = 5.0  
340 Begin iteration:  
341  
342 iter = 10  
343     cord_individual_obj[indivial_i,:] = [ 0. 3. 63. 66.]  
344     cord_individual_obj[indivial_i,:] = [ 1. 3. 52. 55.]  
345     cord_individual_obj[indivial_i,:] = [ 2. 5. 40. 45.]  
346     cord_individual_obj[indivial_i,:] = [ 3. 3. 35. 38.]  
347     cord_individual_obj[indivial_i,:] = [ 4. 4. 40. 44.]  
348     cord_individual_obj[indivial_i,:] = [ 5. 4. 30. 34.]  
349     cord_individual_obj[indivial_i,:] = [ 6. 7. 31. 38.]  
350     cord_individual_obj[indivial_i,:] = [ 7. 7. 20. 27.]  
351     cord_individual_obj[indivial_i,:] = [ 8. 4. 29. 33.]  
352     cord_individual_obj[indivial_i,:] = [ 9. 9. 28. 37.]  
353     cord_individual_obj[indivial_i,:] = [10. 7. 26. 33.]  
354     cord_individual_obj[indivial_i,:] = [11. 3. 6. 9.]  
355     cord_individual_obj[indivial_i,:] = [12. 5. 46. 51.]  
356     cord_individual_obj[indivial_i,:] = [13. 5. 30. 35.]  
357     cord_individual_obj[indivial_i,:] = [14. 4. 55. 59.]  
358     cord_individual_obj[indivial_i,:] = [15. 3. 38. 41.]  
359     cord_individual_obj[indivial_i,:] = [16. 3. 115. 118.]  
360     cord_individual_obj[indivial_i,:] = [17. 3. 58. 61.]  
361     cord_individual_obj[indivial_i,:] = [18. 3. 84. 87.]  
362     cord_individual_obj[indivial_i,:] = [19. 3. 64. 67.]  
363     cord_individual_obj[indivial_i,:] = [20. 4. 40. 44.]  
364     cord_individual_obj[indivial_i,:] = [21. 5. 16. 21.]  
365     cord_individual_obj[indivial_i,:] = [22. 3. 62. 65.]  
366     cord_individual_obj[indivial_i,:] = [23. 2. 3. 5.]  
367     cord_individual_obj[indivial_i,:] = [24. 5. 60. 65.]  
368  
369 min(cord_individual_obj[:,3]) = 5.0  
370 histol_G_best_iter[iter,3] = 5.0  
371 Begin iteration:  
372  
373 iter = 11  
374     cord_individual_obj[indivial_i,:] = [ 0. 3. 80. 83.]  
375     cord_individual_obj[indivial_i,:] = [ 1. 3. 92. 95.]  
376     cord_individual_obj[indivial_i,:] = [ 2. 3. 98. 101.]  
377     cord_individual_obj[indivial_i,:] = [ 3. 4. 81. 85.]  
378     cord_individual_obj[indivial_i,:] = [ 4. 3. 20. 23.]  
379     cord_individual_obj[indivial_i,:] = [ 5. 3. 52. 55.]  
380     cord_individual_obj[indivial_i,:] = [ 6. 3. 20. 23.]  
381     cord_individual_obj[indivial_i,:] = [ 7. 4. 117. 121.]  
382     cord_individual_obj[indivial_i,:] = [ 8. 4. 45. 49.]  
383     cord_individual_obj[indivial_i,:] = [ 9. 4. 11. 15.]  
384     cord_individual_obj[indivial_i,:] = [10. 4. 28. 32.]  
385     cord_individual_obj[indivial_i,:] = [11. 3. 52. 55.]  
386     cord_individual_obj[indivial_i,:] = [12. 2. 99. 101.]  
387     cord_individual_obj[indivial_i,:] = [13. 5. 12. 17.]  
388     cord_individual_obj[indivial_i,:] = [14. 3. 91. 94.]  
389     cord_individual_obj[indivial_i,:] = [15. 3. 93. 96.]  
390     cord_individual_obj[indivial_i,:] = [16. 2. 3. 5.]  
391     cord_individual_obj[indivial_i,:] = [17. 6. 40. 46.]  
392     cord_individual_obj[indivial_i,:] = [18. 5. 22. 27.]  
393     cord_individual_obj[indivial_i,:] = [19. 3. 92. 95.]  
394     cord_individual_obj[indivial_i,:] = [20. 4. 22. 26.]  
395     cord_individual_obj[indivial_i,:] = [21. 4. 18. 22.]  
396     cord_individual_obj[indivial_i,:] = [22. 2. 99. 101.]  
397     cord_individual_obj[indivial_i,:] = [23. 3. 91. 94.]  
398     cord_individual_obj[indivial_i,:] = [24. 4. 7. 11.]  
399  
400 min(cord_individual_obj[:,3]) = 5.0  
401 histol_G_best_iter[iter,3] = 5.0  
402 Begin iteration:  
403  
404 iter = 12  
405     cord_individual_obj[indivial_i,:] = [ 0. 3. 63. 66.]  
406     cord_individual_obj[indivial_i,:] = [ 1. 3. 60. 63.]  
407     cord_individual_obj[indivial_i,:] = [ 2. 4. 62. 66.]  
408     cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]  
409     cord_individual_obj[indivial_i,:] = [ 4. 3. 68. 71.]  
410     cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]  
411     cord_individual_obj[indivial_i,:] = [ 6. 4. 16. 20.]  
412     cord_individual_obj[indivial_i,:] = [ 7. 2. 3. 5.]  
413     cord_individual_obj[indivial_i,:] = [ 8. 4. 34. 38.]  
414     cord_individual_obj[indivial_i,:] = [ 9. 3. 45. 48.]  
415     cord_individual_obj[indivial_i,:] = [10. 6. 18. 24.]
```

```

416 cord_individual_obj[indivial_i,:] = [11. 4. 32. 36.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 72. 75.]
418 cord_individual_obj[indivial_i,:] = [13. 5. 45. 50.]
419 cord_individual_obj[indivial_i,:] = [14. 5. 53. 58.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 68. 71.]
421 cord_individual_obj[indivial_i,:] = [16. 5. 22. 27.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 47. 50.]
423 cord_individual_obj[indivial_i,:] = [18. 3. 49. 52.]
424 cord_individual_obj[indivial_i,:] = [19. 3. 48. 51.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 27. 30.]
426 cord_individual_obj[indivial_i,:] = [21. 4. 64. 68.]
427 cord_individual_obj[indivial_i,:] = [22. 4. 72. 76.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 91. 94.]
429 cord_individual_obj[indivial_i,:] = [24. 5. 60. 65.]
430
431 min(cord_individual_obj[:,3]) = 5.0
432 histol_G_best_iter[iter,3] = 5.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 4. 21. 25.]
437 cord_individual_obj[indivial_i,:] = [ 1. 4. 53. 57.]
438 cord_individual_obj[indivial_i,:] = [ 2. 4. 46. 50.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 38. 42.]
440 cord_individual_obj[indivial_i,:] = [ 4. 3. 80. 83.]
441 cord_individual_obj[indivial_i,:] = [ 5. 4. 54. 58.]
442 cord_individual_obj[indivial_i,:] = [ 6. 4. 24. 28.]
443 cord_individual_obj[indivial_i,:] = [ 7. 5. 29. 34.]
444 cord_individual_obj[indivial_i,:] = [ 8. 4. 28. 32.]
445 cord_individual_obj[indivial_i,:] = [ 9. 3. 45. 48.]
446 cord_individual_obj[indivial_i,:] = [10. 5. 33. 38.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 60. 64.]
448 cord_individual_obj[indivial_i,:] = [12. 4. 53. 57.]
449 cord_individual_obj[indivial_i,:] = [13. 5. 24. 29.]
450 cord_individual_obj[indivial_i,:] = [14. 3. 60. 63.]
451 cord_individual_obj[indivial_i,:] = [15. 4. 68. 72.]
452 cord_individual_obj[indivial_i,:] = [16. 5. 22. 27.]
453 cord_individual_obj[indivial_i,:] = [17. 4. 49. 53.]
454 cord_individual_obj[indivial_i,:] = [18. 4. 89. 93.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 40. 44.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 27. 30.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 64. 67.]
458 cord_individual_obj[indivial_i,:] = [22. 4. 72. 76.]
459 cord_individual_obj[indivial_i,:] = [23. 2. 3. 5.]
460 cord_individual_obj[indivial_i,:] = [24. 5. 30. 35.]
461
462 min(cord_individual_obj[:,3]) = 5.0
463 histol_G_best_iter[iter,3] = 5.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 3. 63. 66.]
468 cord_individual_obj[indivial_i,:] = [ 1. 3. 60. 63.]
469 cord_individual_obj[indivial_i,:] = [ 2. 4. 39. 43.]
470 cord_individual_obj[indivial_i,:] = [ 3. 4. 37. 41.]
471 cord_individual_obj[indivial_i,:] = [ 4. 3. 68. 71.]
472 cord_individual_obj[indivial_i,:] = [ 5. 5. 33. 38.]
473 cord_individual_obj[indivial_i,:] = [ 6. 4. 76. 80.]
474 cord_individual_obj[indivial_i,:] = [ 7. 5. 29. 34.]
475 cord_individual_obj[indivial_i,:] = [ 8. 4. 32. 36.]
476 cord_individual_obj[indivial_i,:] = [ 9. 3. 47. 50.]
477 cord_individual_obj[indivial_i,:] = [10. 5. 16. 21.]
478 cord_individual_obj[indivial_i,:] = [11. 3. 60. 63.]
479 cord_individual_obj[indivial_i,:] = [12. 4. 16. 20.]
480 cord_individual_obj[indivial_i,:] = [13. 5. 56. 61.]
481 cord_individual_obj[indivial_i,:] = [14. 4. 49. 53.]
482 cord_individual_obj[indivial_i,:] = [15. 3. 68. 71.]
483 cord_individual_obj[indivial_i,:] = [16. 4. 20. 24.]
484 cord_individual_obj[indivial_i,:] = [17. 5. 47. 52.]
485 cord_individual_obj[indivial_i,:] = [18. 2. 3. 5.]
486 cord_individual_obj[indivial_i,:] = [19. 4. 40. 44.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 86. 89.]
488 cord_individual_obj[indivial_i,:] = [21. 2. 64. 66.]
489 cord_individual_obj[indivial_i,:] = [22. 4. 72. 76.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 91. 94.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 88. 91.]
492
493 min(cord_individual_obj[:,3]) = 5.0
494 histol_G_best_iter[iter,3] = 5.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 4. 93. 97.]
499 cord_individual_obj[indivial_i,:] = [ 1. 4. 49. 53.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 4. 61. 65.]
501 cord_individual_obj[indivial_i,:] = [ 3. 3. 48. 51.]
502 cord_individual_obj[indivial_i,:] = [ 4. 5. 72. 77.]
503 cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]
504 cord_individual_obj[indivial_i,:] = [ 6. 4. 16. 20.]
505 cord_individual_obj[indivial_i,:] = [ 7. 5. 29. 34.]
506 cord_individual_obj[indivial_i,:] = [ 8. 4. 34. 38.]
507 cord_individual_obj[indivial_i,:] = [ 9. 4. 39. 43.]
508 cord_individual_obj[indivial_i,:] = [10. 6. 18. 24.]
509 cord_individual_obj[indivial_i,:] = [11. 5. 36. 41.]
510 cord_individual_obj[indivial_i,:] = [12. 5. 52. 57.]
511 cord_individual_obj[indivial_i,:] = [13. 5. 45. 50.]
512 cord_individual_obj[indivial_i,:] = [14. 4. 60. 64.]
513 cord_individual_obj[indivial_i,:] = [15. 4. 93. 97.]
514 cord_individual_obj[indivial_i,:] = [16. 5. 22. 27.]
515 cord_individual_obj[indivial_i,:] = [17. 5. 49. 54.]
516 cord_individual_obj[indivial_i,:] = [18. 3. 49. 52.]
517 cord_individual_obj[indivial_i,:] = [19. 3. 40. 43.]
518 cord_individual_obj[indivial_i,:] = [20. 3. 27. 30.]
519 cord_individual_obj[indivial_i,:] = [21. 3. 62. 65.]
520 cord_individual_obj[indivial_i,:] = [22. 4. 65. 69.]
521 cord_individual_obj[indivial_i,:] = [23. 2. 3. 5.]
522 cord_individual_obj[indivial_i,:] = [24. 5. 60. 65.]
523
524 min(cord_individual_obj[:, 3]) = 5.0
525 histol_G_best_iter[iter, 3] = 5.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 2. 3. 5.]
530 cord_individual_obj[indivial_i,:] = [ 1. 4. 53. 57.]
531 cord_individual_obj[indivial_i,:] = [ 2. 5. 39. 44.]
532 cord_individual_obj[indivial_i,:] = [ 3. 4. 37. 41.]
533 cord_individual_obj[indivial_i,:] = [ 4. 3. 68. 71.]
534 cord_individual_obj[indivial_i,:] = [ 5. 5. 54. 59.]
535 cord_individual_obj[indivial_i,:] = [ 6. 4. 24. 28.]
536 cord_individual_obj[indivial_i,:] = [ 7. 4. 29. 33.]
537 cord_individual_obj[indivial_i,:] = [ 8. 4. 28. 32.]
538 cord_individual_obj[indivial_i,:] = [ 9. 4. 20. 24.]
539 cord_individual_obj[indivial_i,:] = [10. 6. 22. 28.]
540 cord_individual_obj[indivial_i,:] = [11. 5. 54. 59.]
541 cord_individual_obj[indivial_i,:] = [12. 3. 53. 56.]
542 cord_individual_obj[indivial_i,:] = [13. 6. 25. 31.]
543 cord_individual_obj[indivial_i,:] = [14. 4. 49. 53.]
544 cord_individual_obj[indivial_i,:] = [15. 4. 93. 97.]
545 cord_individual_obj[indivial_i,:] = [16. 5. 22. 27.]
546 cord_individual_obj[indivial_i,:] = [17. 3. 47. 50.]
547 cord_individual_obj[indivial_i,:] = [18. 4. 123. 127.]
548 cord_individual_obj[indivial_i,:] = [19. 3. 28. 31.]
549 cord_individual_obj[indivial_i,:] = [20. 3. 77. 80.]
550 cord_individual_obj[indivial_i,:] = [21. 4. 92. 96.]
551 cord_individual_obj[indivial_i,:] = [22. 3. 57. 60.]
552 cord_individual_obj[indivial_i,:] = [23. 3. 91. 94.]
553 cord_individual_obj[indivial_i,:] = [24. 3. 28. 31.]
554
555 min(cord_individual_obj[:, 3]) = 5.0
556 histol_G_best_iter[iter, 3] = 5.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 3. 39. 42.]
561 cord_individual_obj[indivial_i,:] = [ 1. 3. 84. 87.]
562 cord_individual_obj[indivial_i,:] = [ 2. 3. 32. 35.]
563 cord_individual_obj[indivial_i,:] = [ 3. 2. 15. 17.]
564 cord_individual_obj[indivial_i,:] = [ 4. 4. 52. 56.]
565 cord_individual_obj[indivial_i,:] = [ 5. 4. 31. 35.]
566 cord_individual_obj[indivial_i,:] = [ 6. 5. 69. 74.]
567 cord_individual_obj[indivial_i,:] = [ 7. 4. 19. 23.]
568 cord_individual_obj[indivial_i,:] = [ 8. 4. 32. 36.]
569 cord_individual_obj[indivial_i,:] = [ 9. 3. 73. 76.]
570 cord_individual_obj[indivial_i,:] = [10. 5. 28. 33.]
571 cord_individual_obj[indivial_i,:] = [11. 4. 48. 52.]
572 cord_individual_obj[indivial_i,:] = [12. 3. 49. 52.]
573 cord_individual_obj[indivial_i,:] = [13. 4. 45. 49.]
574 cord_individual_obj[indivial_i,:] = [14. 3. 24. 27.]
575 cord_individual_obj[indivial_i,:] = [15. 3. 76. 79.]
576 cord_individual_obj[indivial_i,:] = [16. 4. 138. 142.]
577 cord_individual_obj[indivial_i,:] = [17. 3. 74. 77.]
578 cord_individual_obj[indivial_i,:] = [18. 2. 3. 5.]
579 cord_individual_obj[indivial_i,:] = [19. 3. 76. 79.]
580 cord_individual_obj[indivial_i,:] = [20. 3. 68. 71.]
581 cord_individual_obj[indivial_i,:] = [21. 3. 77. 80.]
582 cord_individual_obj[indivial_i,:] = [22. 3. 73. 76.]
583 cord_individual_obj[indivial_i,:] = [23. 3. 106. 109.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 3. 58. 61.]  
585  
586     min(cord_individual_obj[:, 3]) = 5.0  
587     historl_G_best_iter[iter, 3] = 5.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 5. 28. 33.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 3. 20. 23.]  
593     cord_individual_obj[indivial_i, :] = [ 2. 3. 51. 54.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 4. 25. 29.]  
595     cord_individual_obj[indivial_i, :] = [ 4. 3. 27. 30.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 3. 23. 26.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 3. 35. 38.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 5. 20. 25.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 4. 53. 57.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 4. 46. 50.]  
601     cord_individual_obj[indivial_i, :] = [10. 4. 64. 68.]  
602     cord_individual_obj[indivial_i, :] = [11. 3. 71. 74.]  
603     cord_individual_obj[indivial_i, :] = [12. 6. 12. 18.]  
604     cord_individual_obj[indivial_i, :] = [13. 5. 46. 51.]  
605     cord_individual_obj[indivial_i, :] = [14. 2. 101. 103.]  
606     cord_individual_obj[indivial_i, :] = [15. 4. 60. 64.]  
607     cord_individual_obj[indivial_i, :] = [16. 2. 3. 5.]  
608     cord_individual_obj[indivial_i, :] = [17. 4. 53. 57.]  
609     cord_individual_obj[indivial_i, :] = [18. 3. 19. 22.]  
610     cord_individual_obj[indivial_i, :] = [19. 3. 47. 50.]  
611     cord_individual_obj[indivial_i, :] = [20. 3. 85. 88.]  
612     cord_individual_obj[indivial_i, :] = [21. 4. 42. 46.]  
613     cord_individual_obj[indivial_i, :] = [22. 3. 79. 82.]  
614     cord_individual_obj[indivial_i, :] = [23. 3. 27. 30.]  
615     cord_individual_obj[indivial_i, :] = [24. 5. 42. 47.]  
616  
617     min(cord_individual_obj[:, 3]) = 5.0  
618     historl_G_best_iter[iter, 3] = 5.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 3. 29. 32.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 4. 53. 57.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 3. 62. 65.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 3. 53. 56.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 5. 72. 77.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 4. 54. 58.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 4. 16. 20.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 5. 30. 35.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 4. 34. 38.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 4. 45. 49.]  
632     cord_individual_obj[indivial_i, :] = [10. 6. 18. 24.]  
633     cord_individual_obj[indivial_i, :] = [11. 5. 65. 70.]  
634     cord_individual_obj[indivial_i, :] = [12. 4. 52. 56.]  
635     cord_individual_obj[indivial_i, :] = [13. 5. 45. 50.]  
636     cord_individual_obj[indivial_i, :] = [14. 2. 3. 5.]  
637     cord_individual_obj[indivial_i, :] = [15. 4. 69. 73.]  
638     cord_individual_obj[indivial_i, :] = [16. 5. 22. 27.]  
639     cord_individual_obj[indivial_i, :] = [17. 4. 48. 52.]  
640     cord_individual_obj[indivial_i, :] = [18. 3. 72. 75.]  
641     cord_individual_obj[indivial_i, :] = [19. 3. 28. 31.]  
642     cord_individual_obj[indivial_i, :] = [20. 3. 27. 30.]  
643     cord_individual_obj[indivial_i, :] = [21. 4. 90. 94.]  
644     cord_individual_obj[indivial_i, :] = [22. 4. 65. 69.]  
645     cord_individual_obj[indivial_i, :] = [23. 3. 91. 94.]  
646     cord_individual_obj[indivial_i, :] = [24. 5. 60. 65.]  
647  
648     min(cord_individual_obj[:, 3]) = 5.0  
649     historl_G_best_iter[iter, 3] = 5.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 4. 29. 33.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 4. 80. 84.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 4. 69. 73.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 4. 84. 88.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 4. 38. 42.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 4. 27. 31.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 5. 22. 27.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 5. 58. 63.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 5. 53. 58.]  
663     cord_individual_obj[indivial_i, :] = [10. 5. 29. 34.]  
664     cord_individual_obj[indivial_i, :] = [11. 4. 49. 53.]  
665     cord_individual_obj[indivial_i, :] = [12. 4. 64. 68.]  
666     cord_individual_obj[indivial_i, :] = [13. 5. 56. 61.]  
667     cord_individual_obj[indivial_i, :] = [14. 4. 49. 53.]
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668 cord_individual_obj[indivial_i, :] = [15. 4. 62. 66.]
669 cord_individual_obj[indivial_i, :] = [16. 5. 22. 27.]
670 cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
671 cord_individual_obj[indivial_i, :] = [18. 5. 55. 60.]
672 cord_individual_obj[indivial_i, :] = [19. 3. 34. 37.]
673 cord_individual_obj[indivial_i, :] = [20. 4. 122. 126.]
674 cord_individual_obj[indivial_i, :] = [21. 2. 3. 5.]
675 cord_individual_obj[indivial_i, :] = [22. 4. 75. 79.]
676 cord_individual_obj[indivial_i, :] = [23. 3. 68. 71.]
677 cord_individual_obj[indivial_i, :] = [24. 5. 60. 65.]
678
679 min(cord_individual_obj[:, 3]) = 5.0
680 historl_G_best_iter[iter, 3] = 5.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 91.0
689 Proportion_of_area = 0.08425925925925926
690 BEST_CHROM =
691     berth: [ 7. 3. 12.5 16.5 24. 9.5 2. ]
692     time: [1. 0. 1. 0. 0. 1.]
693     num_QC: [4. 4. 4. 5. 2. 4. 4.]
694 Objective function values and some other indicators:
695 Obj0 = 2.00          Obj1 = 3.00          Obj0 + Obj1 = 5.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 3.00
698 Total index of q during berthing: 329.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 6.0           xi: 7.0           bow of i: 4.0           tail of i: 10.0           gama_i0: 1.0           gama_i1: 2.0
    .               gama_i1 + 1: 3.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0           work load_i:
701
    140.0          work load gap_i: 0
    V_id: 1           li: 6.0           xi: 3.0           bow of i: 0.0           tail of i: 6.0           gama_i0: 0.0           gama_i1: 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:
702
    80.0          work load gap_i: 0
    V_id: 2           li: 5.0           xi: 12.5           bow of i: 10.0           tail of i: 15.0           gama_i0: 1.0           gama_i1: 2
    .               gama_i1 + 1: 3.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0           work
    .               load_i: 140.0           work load gap_i: 0
    V_id: 3           li: 7.0           xi: 16.5           bow of i: 13.0           tail of i: 20.0           gama_i0: 0.0           gama_i1: 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
    V_id: 4           li: 8.0           xi: 24.0           bow of i: 20.0           tail of i: 28.0           gama_i0: 0.0           gama_i1: 2
    .               gama_i1 + 1: 3.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 100.0           work
    .               load_i: 100.0           work load gap_i: 0
    V_id: 5           li: 7.0           xi: 9.5            bow of i: 6.0           tail of i: 13.0           gama_i0: 0.0           gama_i1: 0
    .               gama_i1 + 1: 1.0       gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work load_i:
703
    60.0          work load gap_i: 0
    V_id: 6           li: 4.0           xi: 2.0            bow of i: 0.0           tail of i: 4.0           gama_i0: 1.0           gama_i1: 2
    .               gama_i1 + 1: 3.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 140.0           work load_i:
704
    140.0          work load gap_i: 0
705
706
707 Algorithm finished and the total CPU time: 198 s
708 End
709
710

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