

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 5. 62. 67.]
81 cord_individual_obj[indivial_i,:] = [17. 7. 43. 50.]
82 cord_individual_obj[indivial_i,:] = [18. 5. 75. 80.]
83 cord_individual_obj[indivial_i,:] = [19. 5. 32. 37.]
84 cord_individual_obj[indivial_i,:] = [20. 6. 18. 24.]
85 cord_individual_obj[indivial_i,:] = [21. 4. 64. 68.]
86 cord_individual_obj[indivial_i,:] = [22. 7. 36. 43.]
87 cord_individual_obj[indivial_i,:] = [23. 6. 194. 200.]
88 cord_individual_obj[indivial_i,:] = [24. 5. 9. 14.]
89
90 min(cord_individual_obj[:,3]) = 14.0
91 historl_G_best_iter[iter,3] = 14.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 5. 25. 30.]
96 cord_individual_obj[indivial_i,:] = [ 1. 4. 77. 81.]
97 cord_individual_obj[indivial_i,:] = [ 2. 4. 32. 36.]
98 cord_individual_obj[indivial_i,:] = [ 3. 3. 68. 71.]
99 cord_individual_obj[indivial_i,:] = [ 4. 4. 13. 17.]
100 cord_individual_obj[indivial_i,:] = [ 5. 4. 34. 38.]
101 cord_individual_obj[indivial_i,:] = [ 6. 5. 172. 177.]
102 cord_individual_obj[indivial_i,:] = [ 7. 6. 38. 44.]
103 cord_individual_obj[indivial_i,:] = [ 8. 6. 66. 72.]
104 cord_individual_obj[indivial_i,:] = [ 9. 4. 41. 45.]
105 cord_individual_obj[indivial_i,:] = [10. 5. 13. 18.]
106 cord_individual_obj[indivial_i,:] = [11. 5. 50. 55.]
107 cord_individual_obj[indivial_i,:] = [12. 6. 86. 92.]
108 cord_individual_obj[indivial_i,:] = [13. 6. 19. 25.]
109 cord_individual_obj[indivial_i,:] = [14. 6. 20. 26.]
110 cord_individual_obj[indivial_i,:] = [15. 5. 42. 47.]
111 cord_individual_obj[indivial_i,:] = [16. 4. 32. 36.]
112 cord_individual_obj[indivial_i,:] = [17. 4. 90. 94.]
113 cord_individual_obj[indivial_i,:] = [18. 5. 6. 11.]
114 cord_individual_obj[indivial_i,:] = [19. 6. 61. 67.]
115 cord_individual_obj[indivial_i,:] = [20. 5. 73. 78.]
116 cord_individual_obj[indivial_i,:] = [21. 4. 79. 83.]
117 cord_individual_obj[indivial_i,:] = [22. 5. 42. 47.]
118 cord_individual_obj[indivial_i,:] = [23. 5. 9. 14.]
119 cord_individual_obj[indivial_i,:] = [24. 4. 57. 61.]
120
121 min(cord_individual_obj[:,3]) = 11.0
122 historl_G_best_iter[iter,3] = 11.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 5. 46. 51.]
127 cord_individual_obj[indivial_i,:] = [ 1. 5. 81. 86.]
128 cord_individual_obj[indivial_i,:] = [ 2. 5. 80. 85.]
129 cord_individual_obj[indivial_i,:] = [ 3. 4. 141. 145.]
130 cord_individual_obj[indivial_i,:] = [ 4. 6. 21. 27.]
131 cord_individual_obj[indivial_i,:] = [ 5. 4. 41. 45.]
132 cord_individual_obj[indivial_i,:] = [ 6. 5. 6. 11.]
133 cord_individual_obj[indivial_i,:] = [ 7. 7. 88. 95.]
134 cord_individual_obj[indivial_i,:] = [ 8. 5. 25. 30.]
135 cord_individual_obj[indivial_i,:] = [ 9. 5. 14. 19.]
136 cord_individual_obj[indivial_i,:] = [10. 5. 54. 59.]
137 cord_individual_obj[indivial_i,:] = [11. 5. 82. 87.]
138 cord_individual_obj[indivial_i,:] = [12. 4. 52. 56.]
139 cord_individual_obj[indivial_i,:] = [13. 5. 144. 149.]
140 cord_individual_obj[indivial_i,:] = [14. 6. 14. 20.]
141 cord_individual_obj[indivial_i,:] = [15. 6. 26. 32.]
142 cord_individual_obj[indivial_i,:] = [16. 4. 161. 165.]
143 cord_individual_obj[indivial_i,:] = [17. 5. 94. 99.]
144 cord_individual_obj[indivial_i,:] = [18. 5. 42. 47.]
145 cord_individual_obj[indivial_i,:] = [19. 5. 68. 73.]
146 cord_individual_obj[indivial_i,:] = [20. 6. 17. 23.]
147 cord_individual_obj[indivial_i,:] = [21. 4. 62. 66.]
148 cord_individual_obj[indivial_i,:] = [22. 5. 61. 66.]
149 cord_individual_obj[indivial_i,:] = [23. 4. 60. 64.]
150 cord_individual_obj[indivial_i,:] = [24. 5. 17. 22.]
151
152 min(cord_individual_obj[:,3]) = 11.0
153 historl_G_best_iter[iter,3] = 11.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 4. 84. 88.]
158 cord_individual_obj[indivial_i,:] = [ 1. 4. 16. 20.]
159 cord_individual_obj[indivial_i,:] = [ 2. 6. 29. 35.]
160 cord_individual_obj[indivial_i,:] = [ 3. 4. 69. 73.]
161 cord_individual_obj[indivial_i,:] = [ 4. 5. 48. 53.]
162 cord_individual_obj[indivial_i,:] = [ 5. 4. 83. 87.]
163 cord_individual_obj[indivial_i,:] = [ 6. 6. 85. 91.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 5. 13. 18.]
165 cord_individual_obj[indivial_i,:] = [ 8. 4. 40. 44.]
166 cord_individual_obj[indivial_i,:] = [ 9. 5. 41. 46.]
167 cord_individual_obj[indivial_i,:] = [10. 5. 57. 62.]
168 cord_individual_obj[indivial_i,:] = [11. 4. 83. 87.]
169 cord_individual_obj[indivial_i,:] = [12. 4. 146. 150.]
170 cord_individual_obj[indivial_i,:] = [13. 6. 103. 109.]
171 cord_individual_obj[indivial_i,:] = [14. 4. 22. 26.]
172 cord_individual_obj[indivial_i,:] = [15. 4. 136. 140.]
173 cord_individual_obj[indivial_i,:] = [16. 5. 6. 11.]
174 cord_individual_obj[indivial_i,:] = [17. 5. 127. 132.]
175 cord_individual_obj[indivial_i,:] = [18. 5. 13. 18.]
176 cord_individual_obj[indivial_i,:] = [19. 3. 5. 8.]
177 cord_individual_obj[indivial_i,:] = [20. 4. 87. 91.]
178 cord_individual_obj[indivial_i,:] = [21. 6. 86. 92.]
179 cord_individual_obj[indivial_i,:] = [22. 5. 43. 48.]
180 cord_individual_obj[indivial_i,:] = [23. 4. 124. 128.]
181 cord_individual_obj[indivial_i,:] = [24. 4. 131. 135.]
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. 4. 47. 51.]
189 cord_individual_obj[indivial_i,:] = [ 1. 5. 53. 58.]
190 cord_individual_obj[indivial_i,:] = [ 2. 5. 165. 170.]
191 cord_individual_obj[indivial_i,:] = [ 3. 3. 105. 108.]
192 cord_individual_obj[indivial_i,:] = [ 4. 4. 92. 96.]
193 cord_individual_obj[indivial_i,:] = [ 5. 4. 92. 96.]
194 cord_individual_obj[indivial_i,:] = [ 6. 4. 94. 98.]
195 cord_individual_obj[indivial_i,:] = [ 7. 5. 92. 97.]
196 cord_individual_obj[indivial_i,:] = [ 8. 4. 70. 74.]
197 cord_individual_obj[indivial_i,:] = [ 9. 4. 79. 83.]
198 cord_individual_obj[indivial_i,:] = [10. 4. 122. 126.]
199 cord_individual_obj[indivial_i,:] = [11. 5. 80. 85.]
200 cord_individual_obj[indivial_i,:] = [12. 3. 5. 8.]
201 cord_individual_obj[indivial_i,:] = [13. 4. 101. 105.]
202 cord_individual_obj[indivial_i,:] = [14. 3. 28. 31.]
203 cord_individual_obj[indivial_i,:] = [15. 5. 59. 64.]
204 cord_individual_obj[indivial_i,:] = [16. 4. 95. 99.]
205 cord_individual_obj[indivial_i,:] = [17. 5. 58. 63.]
206 cord_individual_obj[indivial_i,:] = [18. 5. 58. 63.]
207 cord_individual_obj[indivial_i,:] = [19. 5. 52. 57.]
208 cord_individual_obj[indivial_i,:] = [20. 4. 77. 81.]
209 cord_individual_obj[indivial_i,:] = [21. 5. 105. 110.]
210 cord_individual_obj[indivial_i,:] = [22. 5. 54. 59.]
211 cord_individual_obj[indivial_i,:] = [23. 4. 69. 73.]
212 cord_individual_obj[indivial_i,:] = [24. 4. 105. 109.]
213
214 min(cord_individual_obj[:,3]) = 8.0
215 historl_G_best_iter[iter,3] = 8.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 5. 43. 48.]
220 cord_individual_obj[indivial_i,:] = [ 1. 4. 56. 60.]
221 cord_individual_obj[indivial_i,:] = [ 2. 3. 5. 8.]
222 cord_individual_obj[indivial_i,:] = [ 3. 4. 75. 79.]
223 cord_individual_obj[indivial_i,:] = [ 4. 5. 21. 26.]
224 cord_individual_obj[indivial_i,:] = [ 5. 4. 57. 61.]
225 cord_individual_obj[indivial_i,:] = [ 6. 3. 92. 95.]
226 cord_individual_obj[indivial_i,:] = [ 7. 6. 114. 120.]
227 cord_individual_obj[indivial_i,:] = [ 8. 6. 69. 75.]
228 cord_individual_obj[indivial_i,:] = [ 9. 4. 70. 74.]
229 cord_individual_obj[indivial_i,:] = [10. 4. 49. 53.]
230 cord_individual_obj[indivial_i,:] = [11. 6. 38. 44.]
231 cord_individual_obj[indivial_i,:] = [12. 5. 109. 114.]
232 cord_individual_obj[indivial_i,:] = [13. 4. 79. 83.]
233 cord_individual_obj[indivial_i,:] = [14. 5. 31. 36.]
234 cord_individual_obj[indivial_i,:] = [15. 5. 93. 98.]
235 cord_individual_obj[indivial_i,:] = [16. 5. 21. 26.]
236 cord_individual_obj[indivial_i,:] = [17. 6. 33. 39.]
237 cord_individual_obj[indivial_i,:] = [18. 5. 113. 118.]
238 cord_individual_obj[indivial_i,:] = [19. 6. 58. 64.]
239 cord_individual_obj[indivial_i,:] = [20. 3. 35. 38.]
240 cord_individual_obj[indivial_i,:] = [21. 5. 117. 122.]
241 cord_individual_obj[indivial_i,:] = [22. 4. 66. 70.]
242 cord_individual_obj[indivial_i,:] = [23. 4. 46. 50.]
243 cord_individual_obj[indivial_i,:] = [24. 4. 94. 98.]
244
245 min(cord_individual_obj[:,3]) = 8.0
246 historl_G_best_iter[iter,3] = 8.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  6. 14. 20.]
251 cord_individual_obj[indivial_i, :] = [ 1.  5.  9. 14.]
252 cord_individual_obj[indivial_i, :] = [ 2.  4. 142. 146.]
253 cord_individual_obj[indivial_i, :] = [ 3.  4. 54. 58.]
254 cord_individual_obj[indivial_i, :] = [ 4.  4. 60. 64.]
255 cord_individual_obj[indivial_i, :] = [ 5.  5. 35. 40.]
256 cord_individual_obj[indivial_i, :] = [ 6.  3. 108. 111.]
257 cord_individual_obj[indivial_i, :] = [ 7.  6. 33. 39.]
258 cord_individual_obj[indivial_i, :] = [ 8.  5. 16. 21.]
259 cord_individual_obj[indivial_i, :] = [ 9.  5. 74. 79.]
260 cord_individual_obj[indivial_i, :] = [10.  4. 137. 141.]
261 cord_individual_obj[indivial_i, :] = [11.  4. 74. 78.]
262 cord_individual_obj[indivial_i, :] = [12.  4. 26. 30.]
263 cord_individual_obj[indivial_i, :] = [13.  4. 91. 95.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 109. 113.]
265 cord_individual_obj[indivial_i, :] = [15.  6. 39. 45.]
266 cord_individual_obj[indivial_i, :] = [16.  5. 94. 99.]
267 cord_individual_obj[indivial_i, :] = [17.  5. 40. 45.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 14. 19.]
269 cord_individual_obj[indivial_i, :] = [19.  5.  8. 13.]
270 cord_individual_obj[indivial_i, :] = [20.  4. 17. 21.]
271 cord_individual_obj[indivial_i, :] = [21.  3.  5.  8.]
272 cord_individual_obj[indivial_i, :] = [22.  4. 66. 70.]
273 cord_individual_obj[indivial_i, :] = [23.  3. 76. 79.]
274 cord_individual_obj[indivial_i, :] = [24.  5. 48. 53.]
275

276 min(cord_individual_obj[:, 3]) = 8.0
277 historl_G_best_iter[iter, 3] = 8.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  5. 48. 53.]
282 cord_individual_obj[indivial_i, :] = [ 1.  5. 52. 57.]
283 cord_individual_obj[indivial_i, :] = [ 2.  3. 5. 8.]
284 cord_individual_obj[indivial_i, :] = [ 3.  5. 67. 72.]
285 cord_individual_obj[indivial_i, :] = [ 4.  5. 20. 25.]
286 cord_individual_obj[indivial_i, :] = [ 5.  5. 95. 100.]
287 cord_individual_obj[indivial_i, :] = [ 6.  4. 73. 77.]
288 cord_individual_obj[indivial_i, :] = [ 7.  4. 76. 80.]
289 cord_individual_obj[indivial_i, :] = [ 8.  4. 25. 29.]
290 cord_individual_obj[indivial_i, :] = [ 9.  5. 90. 95.]
291 cord_individual_obj[indivial_i, :] = [10.  4. 58. 62.]
292 cord_individual_obj[indivial_i, :] = [11.  5. 75. 80.]
293 cord_individual_obj[indivial_i, :] = [12.  5. 117. 122.]
294 cord_individual_obj[indivial_i, :] = [13.  4. 77. 81.]
295 cord_individual_obj[indivial_i, :] = [14.  5. 25. 30.]
296 cord_individual_obj[indivial_i, :] = [15.  4. 86. 90.]
297 cord_individual_obj[indivial_i, :] = [16.  3. 60. 63.]
298 cord_individual_obj[indivial_i, :] = [17.  5. 131. 136.]
299 cord_individual_obj[indivial_i, :] = [18.  4. 11. 15.]
300 cord_individual_obj[indivial_i, :] = [19.  4. 66. 70.]
301 cord_individual_obj[indivial_i, :] = [20.  4. 90. 94.]
302 cord_individual_obj[indivial_i, :] = [21.  5. 80. 85.]
303 cord_individual_obj[indivial_i, :] = [22.  6. 20. 26.]
304 cord_individual_obj[indivial_i, :] = [23.  4. 24. 28.]
305 cord_individual_obj[indivial_i, :] = [24.  4. 84. 88.]
306

307 min(cord_individual_obj[:, 3]) = 8.0
308 historl_G_best_iter[iter, 3] = 8.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  4. 32. 36.]
313 cord_individual_obj[indivial_i, :] = [ 1.  5. 78. 83.]
314 cord_individual_obj[indivial_i, :] = [ 2.  4. 142. 146.]
315 cord_individual_obj[indivial_i, :] = [ 3.  4. 73. 77.]
316 cord_individual_obj[indivial_i, :] = [ 4.  4. 34. 38.]
317 cord_individual_obj[indivial_i, :] = [ 5.  4. 139. 143.]
318 cord_individual_obj[indivial_i, :] = [ 6.  3. 118. 121.]
319 cord_individual_obj[indivial_i, :] = [ 7.  5. 70. 75.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 5. 9.]
321 cord_individual_obj[indivial_i, :] = [ 9.  6. 48. 54.]
322 cord_individual_obj[indivial_i, :] = [10.  3. 138. 141.]
323 cord_individual_obj[indivial_i, :] = [11.  4. 55. 59.]
324 cord_individual_obj[indivial_i, :] = [12.  5. 145. 150.]
325 cord_individual_obj[indivial_i, :] = [13.  4. 101. 105.]
326 cord_individual_obj[indivial_i, :] = [14.  4. 53. 57.]
327 cord_individual_obj[indivial_i, :] = [15.  4. 55. 59.]
328 cord_individual_obj[indivial_i, :] = [16.  4. 44. 48.]
329 cord_individual_obj[indivial_i, :] = [17.  3. 5. 8.]
330 cord_individual_obj[indivial_i, :] = [18.  4. 21. 25.]
331 cord_individual_obj[indivial_i, :] = [19.  5. 107. 112.]

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332     cord_individual_obj[indivial_i, :] = [20. 5. 75. 80.]
333     cord_individual_obj[indivial_i, :] = [21. 5. 26. 31.]
334     cord_individual_obj[indivial_i, :] = [22. 5. 54. 59.]
335     cord_individual_obj[indivial_i, :] = [23. 6. 62. 68.]
336     cord_individual_obj[indivial_i, :] = [24. 5. 55. 60.]
337
338 min(cord_individual_obj[:, 3]) = 8.0
339 histol_G_best_iter[iter, 3] = 8.0
340 Begin iteration:
341
342 iter = 10
343     cord_individual_obj[indivial_i, :] = [ 0. 6. 49. 55.]
344     cord_individual_obj[indivial_i, :] = [ 1. 5. 70. 75.]
345     cord_individual_obj[indivial_i, :] = [ 2. 3. 25. 28.]
346     cord_individual_obj[indivial_i, :] = [ 3. 5. 95. 100.]
347     cord_individual_obj[indivial_i, :] = [ 4. 6. 21. 27.]
348     cord_individual_obj[indivial_i, :] = [ 5. 6. 47. 53.]
349     cord_individual_obj[indivial_i, :] = [ 6. 6. 86. 92.]
350     cord_individual_obj[indivial_i, :] = [ 7. 5. 53. 58.]
351     cord_individual_obj[indivial_i, :] = [ 8. 5. 5. 10.]
352     cord_individual_obj[indivial_i, :] = [ 9. 6. 34. 40.]
353     cord_individual_obj[indivial_i, :] = [10. 4. 145. 149.]
354     cord_individual_obj[indivial_i, :] = [11. 4. 59. 63.]
355     cord_individual_obj[indivial_i, :] = [12. 3. 5. 8.]
356     cord_individual_obj[indivial_i, :] = [13. 4. 125. 129.]
357     cord_individual_obj[indivial_i, :] = [14. 5. 25. 30.]
358     cord_individual_obj[indivial_i, :] = [15. 7. 59. 66.]
359     cord_individual_obj[indivial_i, :] = [16. 3. 104. 107.]
360     cord_individual_obj[indivial_i, :] = [17. 4. 94. 98.]
361     cord_individual_obj[indivial_i, :] = [18. 5. 37. 42.]
362     cord_individual_obj[indivial_i, :] = [19. 5. 80. 85.]
363     cord_individual_obj[indivial_i, :] = [20. 4. 173. 177.]
364     cord_individual_obj[indivial_i, :] = [21. 4. 72. 76.]
365     cord_individual_obj[indivial_i, :] = [22. 4. 59. 63.]
366     cord_individual_obj[indivial_i, :] = [23. 4. 24. 28.]
367     cord_individual_obj[indivial_i, :] = [24. 6. 58. 64.]
368
369 min(cord_individual_obj[:, 3]) = 8.0
370 histol_G_best_iter[iter, 3] = 8.0
371 Begin iteration:
372
373 iter = 11
374     cord_individual_obj[indivial_i, :] = [ 0. 4. 93. 97.]
375     cord_individual_obj[indivial_i, :] = [ 1. 5. 84. 89.]
376     cord_individual_obj[indivial_i, :] = [ 2. 4. 70. 74.]
377     cord_individual_obj[indivial_i, :] = [ 3. 4. 61. 65.]
378     cord_individual_obj[indivial_i, :] = [ 4. 4. 34. 38.]
379     cord_individual_obj[indivial_i, :] = [ 5. 3. 40. 43.]
380     cord_individual_obj[indivial_i, :] = [ 6. 6. 141. 147.]
381     cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
382     cord_individual_obj[indivial_i, :] = [ 8. 6. 7. 13.]
383     cord_individual_obj[indivial_i, :] = [ 9. 5. 108. 113.]
384     cord_individual_obj[indivial_i, :] = [10. 3. 64. 67.]
385     cord_individual_obj[indivial_i, :] = [11. 3. 103. 106.]
386     cord_individual_obj[indivial_i, :] = [12. 4. 168. 172.]
387     cord_individual_obj[indivial_i, :] = [13. 3. 50. 53.]
388     cord_individual_obj[indivial_i, :] = [14. 7. 76. 83.]
389     cord_individual_obj[indivial_i, :] = [15. 6. 36. 42.]
390     cord_individual_obj[indivial_i, :] = [16. 3. 88. 91.]
391     cord_individual_obj[indivial_i, :] = [17. 5. 78. 83.]
392     cord_individual_obj[indivial_i, :] = [18. 4. 42. 46.]
393     cord_individual_obj[indivial_i, :] = [19. 5. 53. 58.]
394     cord_individual_obj[indivial_i, :] = [20. 3. 5. 8.]
395     cord_individual_obj[indivial_i, :] = [21. 5. 47. 52.]
396     cord_individual_obj[indivial_i, :] = [22. 5. 68. 73.]
397     cord_individual_obj[indivial_i, :] = [23. 4. 23. 27.]
398     cord_individual_obj[indivial_i, :] = [24. 5. 11. 16.]
399
400 min(cord_individual_obj[:, 3]) = 8.0
401 histol_G_best_iter[iter, 3] = 8.0
402 Begin iteration:
403
404 iter = 12
405     cord_individual_obj[indivial_i, :] = [ 0. 6. 21. 27.]
406     cord_individual_obj[indivial_i, :] = [ 1. 4. 65. 69.]
407     cord_individual_obj[indivial_i, :] = [ 2. 5. 49. 54.]
408     cord_individual_obj[indivial_i, :] = [ 3. 5. 50. 55.]
409     cord_individual_obj[indivial_i, :] = [ 4. 5. 21. 26.]
410     cord_individual_obj[indivial_i, :] = [ 5. 5. 108. 113.]
411     cord_individual_obj[indivial_i, :] = [ 6. 4. 21. 25.]
412     cord_individual_obj[indivial_i, :] = [ 7. 4. 105. 109.]
413     cord_individual_obj[indivial_i, :] = [ 8. 4. 61. 65.]
414     cord_individual_obj[indivial_i, :] = [ 9. 6. 44. 50.]
415     cord_individual_obj[indivial_i, :] = [10. 4. 77. 81.]

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```

416 cord_individual_obj[indivial_i,:] = [11. 4. 63. 67.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 5. 8.]
418 cord_individual_obj[indivial_i,:] = [13. 4. 21. 25.]
419 cord_individual_obj[indivial_i,:] = [14. 4. 93. 97.]
420 cord_individual_obj[indivial_i,:] = [15. 4. 53. 57.]
421 cord_individual_obj[indivial_i,:] = [16. 4. 63. 67.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 74. 77.]
423 cord_individual_obj[indivial_i,:] = [18. 4. 57. 61.]
424 cord_individual_obj[indivial_i,:] = [19. 6. 128. 134.]
425 cord_individual_obj[indivial_i,:] = [20. 4. 62. 66.]
426 cord_individual_obj[indivial_i,:] = [21. 4. 81. 85.]
427 cord_individual_obj[indivial_i,:] = [22. 4. 55. 59.]
428 cord_individual_obj[indivial_i,:] = [23. 4. 58. 62.]
429 cord_individual_obj[indivial_i,:] = [24. 4. 71. 75.]
430
431 min(cord_individual_obj[:,3]) = 8.0
432 histol_G_best_iter[iter,3] = 8.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 5. 35. 40.]
437 cord_individual_obj[indivial_i,:] = [ 1. 5. 20. 25.]
438 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 29. 33.]
440 cord_individual_obj[indivial_i,:] = [ 4. 6. 50. 56.]
441 cord_individual_obj[indivial_i,:] = [ 5. 4. 6. 10.]
442 cord_individual_obj[indivial_i,:] = [ 6. 4. 52. 56.]
443 cord_individual_obj[indivial_i,:] = [ 7. 4. 7. 11.]
444 cord_individual_obj[indivial_i,:] = [ 8. 4. 5. 9.]
445 cord_individual_obj[indivial_i,:] = [ 9. 6. 51. 57.]
446 cord_individual_obj[indivial_i,:] = [10. 4. 51. 55.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 67. 71.]
448 cord_individual_obj[indivial_i,:] = [12. 5. 109. 114.]
449 cord_individual_obj[indivial_i,:] = [13. 5. 71. 76.]
450 cord_individual_obj[indivial_i,:] = [14. 4. 70. 74.]
451 cord_individual_obj[indivial_i,:] = [15. 4. 7. 11.]
452 cord_individual_obj[indivial_i,:] = [16. 3. 24. 27.]
453 cord_individual_obj[indivial_i,:] = [17. 4. 91. 95.]
454 cord_individual_obj[indivial_i,:] = [18. 5. 80. 85.]
455 cord_individual_obj[indivial_i,:] = [19. 3. 5. 8.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 24. 27.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 72. 75.]
458 cord_individual_obj[indivial_i,:] = [22. 4. 101. 105.]
459 cord_individual_obj[indivial_i,:] = [23. 5. 154. 159.]
460 cord_individual_obj[indivial_i,:] = [24. 4. 22. 26.]
461
462 min(cord_individual_obj[:,3]) = 8.0
463 histol_G_best_iter[iter,3] = 8.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 5. 51. 56.]
468 cord_individual_obj[indivial_i,:] = [ 1. 4. 105. 109.]
469 cord_individual_obj[indivial_i,:] = [ 2. 5. 91. 96.]
470 cord_individual_obj[indivial_i,:] = [ 3. 4. 39. 43.]
471 cord_individual_obj[indivial_i,:] = [ 4. 4. 50. 54.]
472 cord_individual_obj[indivial_i,:] = [ 5. 4. 24. 28.]
473 cord_individual_obj[indivial_i,:] = [ 6. 4. 67. 71.]
474 cord_individual_obj[indivial_i,:] = [ 7. 6. 37. 43.]
475 cord_individual_obj[indivial_i,:] = [ 8. 6. 106. 112.]
476 cord_individual_obj[indivial_i,:] = [ 9. 5. 22. 27.]
477 cord_individual_obj[indivial_i,:] = [10. 4. 133. 137.]
478 cord_individual_obj[indivial_i,:] = [11. 4. 77. 81.]
479 cord_individual_obj[indivial_i,:] = [12. 3. 96. 99.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 104. 108.]
481 cord_individual_obj[indivial_i,:] = [14. 5. 72. 77.]
482 cord_individual_obj[indivial_i,:] = [15. 4. 75. 79.]
483 cord_individual_obj[indivial_i,:] = [16. 3. 108. 111.]
484 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
485 cord_individual_obj[indivial_i,:] = [18. 7. 39. 46.]
486 cord_individual_obj[indivial_i,:] = [19. 7. 99. 106.]
487 cord_individual_obj[indivial_i,:] = [20. 4. 25. 29.]
488 cord_individual_obj[indivial_i,:] = [21. 5. 109. 114.]
489 cord_individual_obj[indivial_i,:] = [22. 5. 60. 65.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 5. 8.]
491 cord_individual_obj[indivial_i,:] = [24. 6. 70. 76.]
492
493 min(cord_individual_obj[:,3]) = 8.0
494 histol_G_best_iter[iter,3] = 8.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 5. 97. 102.]
499 cord_individual_obj[indivial_i,:] = [ 1. 5. 57. 62.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 5. 49. 54.]
501 cord_individual_obj[indivial_i,:] = [ 3. 4. 67. 71.]
502 cord_individual_obj[indivial_i,:] = [ 4. 4. 59. 63.]
503 cord_individual_obj[indivial_i,:] = [ 5. 5. 98. 103.]
504 cord_individual_obj[indivial_i,:] = [ 6. 4. 77. 81.]
505 cord_individual_obj[indivial_i,:] = [ 7. 4. 68. 72.]
506 cord_individual_obj[indivial_i,:] = [ 8. 4. 65. 69.]
507 cord_individual_obj[indivial_i,:] = [ 9. 5. 88. 93.]
508 cord_individual_obj[indivial_i,:] = [10. 3. 5. 8.]
509 cord_individual_obj[indivial_i,:] = [11. 7. 52. 59.]
510 cord_individual_obj[indivial_i,:] = [12. 5. 96. 101.]
511 cord_individual_obj[indivial_i,:] = [13. 5. 65. 70.]
512 cord_individual_obj[indivial_i,:] = [14. 4. 93. 97.]
513 cord_individual_obj[indivial_i,:] = [15. 6. 84. 90.]
514 cord_individual_obj[indivial_i,:] = [16. 4. 94. 98.]
515 cord_individual_obj[indivial_i,:] = [17. 6. 35. 41.]
516 cord_individual_obj[indivial_i,:] = [18. 6. 68. 74.]
517 cord_individual_obj[indivial_i,:] = [19. 6. 36. 42.]
518 cord_individual_obj[indivial_i,:] = [20. 3. 121. 124.]
519 cord_individual_obj[indivial_i,:] = [21. 4. 81. 85.]
520 cord_individual_obj[indivial_i,:] = [22. 4. 74. 78.]
521 cord_individual_obj[indivial_i,:] = [23. 6. 79. 85.]
522 cord_individual_obj[indivial_i,:] = [24. 4. 93. 97.]
523
524 min(cord_individual_obj[:,3]) = 8.0
525 histol_G_best_iter[iter,3] = 8.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 4. 39. 43.]
530 cord_individual_obj[indivial_i,:] = [ 1. 4. 62. 66.]
531 cord_individual_obj[indivial_i,:] = [ 2. 4. 82. 86.]
532 cord_individual_obj[indivial_i,:] = [ 3. 4. 67. 71.]
533 cord_individual_obj[indivial_i,:] = [ 4. 4. 99. 103.]
534 cord_individual_obj[indivial_i,:] = [ 5. 4. 161. 165.]
535 cord_individual_obj[indivial_i,:] = [ 6. 4. 63. 67.]
536 cord_individual_obj[indivial_i,:] = [ 7. 3. 154. 157.]
537 cord_individual_obj[indivial_i,:] = [ 8. 6. 93. 99.]
538 cord_individual_obj[indivial_i,:] = [ 9. 4. 71. 75.]
539 cord_individual_obj[indivial_i,:] = [10. 3. 121. 124.]
540 cord_individual_obj[indivial_i,:] = [11. 4. 93. 97.]
541 cord_individual_obj[indivial_i,:] = [12. 4. 46. 50.]
542 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
543 cord_individual_obj[indivial_i,:] = [14. 4. 81. 85.]
544 cord_individual_obj[indivial_i,:] = [15. 6. 94. 100.]
545 cord_individual_obj[indivial_i,:] = [16. 3. 122. 125.]
546 cord_individual_obj[indivial_i,:] = [17. 5. 49. 54.]
547 cord_individual_obj[indivial_i,:] = [18. 4. 54. 58.]
548 cord_individual_obj[indivial_i,:] = [19. 6. 36. 42.]
549 cord_individual_obj[indivial_i,:] = [20. 3. 5. 8.]
550 cord_individual_obj[indivial_i,:] = [21. 5. 117. 122.]
551 cord_individual_obj[indivial_i,:] = [22. 5. 56. 61.]
552 cord_individual_obj[indivial_i,:] = [23. 4. 46. 50.]
553 cord_individual_obj[indivial_i,:] = [24. 5. 49. 54.]
554
555 min(cord_individual_obj[:,3]) = 8.0
556 histol_G_best_iter[iter,3] = 8.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 4. 43. 47.]
561 cord_individual_obj[indivial_i,:] = [ 1. 5. 85. 90.]
562 cord_individual_obj[indivial_i,:] = [ 2. 3. 78. 81.]
563 cord_individual_obj[indivial_i,:] = [ 3. 4. 58. 62.]
564 cord_individual_obj[indivial_i,:] = [ 4. 3. 36. 39.]
565 cord_individual_obj[indivial_i,:] = [ 5. 3. 5. 8.]
566 cord_individual_obj[indivial_i,:] = [ 6. 4. 63. 67.]
567 cord_individual_obj[indivial_i,:] = [ 7. 5. 55. 60.]
568 cord_individual_obj[indivial_i,:] = [ 8. 4. 70. 74.]
569 cord_individual_obj[indivial_i,:] = [ 9. 5. 41. 46.]
570 cord_individual_obj[indivial_i,:] = [10. 3. 120. 123.]
571 cord_individual_obj[indivial_i,:] = [11. 4. 94. 98.]
572 cord_individual_obj[indivial_i,:] = [12. 5. 153. 158.]
573 cord_individual_obj[indivial_i,:] = [13. 4. 87. 91.]
574 cord_individual_obj[indivial_i,:] = [14. 4. 61. 65.]
575 cord_individual_obj[indivial_i,:] = [15. 5. 85. 90.]
576 cord_individual_obj[indivial_i,:] = [16. 4. 56. 60.]
577 cord_individual_obj[indivial_i,:] = [17. 3. 57. 60.]
578 cord_individual_obj[indivial_i,:] = [18. 3. 56. 59.]
579 cord_individual_obj[indivial_i,:] = [19. 4. 76. 80.]
580 cord_individual_obj[indivial_i,:] = [20. 4. 62. 66.]
581 cord_individual_obj[indivial_i,:] = [21. 4. 58. 62.]
582 cord_individual_obj[indivial_i,:] = [22. 5. 64. 69.]
583 cord_individual_obj[indivial_i,:] = [23. 5. 86. 91.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [ 24.  4. 105. 109.]
585
586     min(cord_individual_obj[:, 3]) = 8.0
587     historl_G_best_iter[iter, 3] = 8.0
588 Begin iteration:
589 iter = 18
590     cord_individual_obj[indivial_i, :] = [ 0.  5. 33. 38.]
591     cord_individual_obj[indivial_i, :] = [ 1.  5. 57. 62.]
592     cord_individual_obj[indivial_i, :] = [ 2.  3. 106. 109.]
593     cord_individual_obj[indivial_i, :] = [ 3.  4. 80. 84.]
594     cord_individual_obj[indivial_i, :] = [ 4.  4. 47. 51.]
595     cord_individual_obj[indivial_i, :] = [ 5.  5. 68. 73.]
596     cord_individual_obj[indivial_i, :] = [ 6.  3. 134. 137.]
597     cord_individual_obj[indivial_i, :] = [ 7.  5. 78. 83.]
598     cord_individual_obj[indivial_i, :] = [ 8.  4. 70. 74.]
599     cord_individual_obj[indivial_i, :] = [ 9.  4. 85. 89.]
600     cord_individual_obj[indivial_i, :] = [10.  4. 48. 52.]
601     cord_individual_obj[indivial_i, :] = [11.  4. 74. 78.]
602     cord_individual_obj[indivial_i, :] = [12.  3. 5. 8.]
603     cord_individual_obj[indivial_i, :] = [13.  5. 30. 35.]
604     cord_individual_obj[indivial_i, :] = [14.  4. 29. 33.]
605     cord_individual_obj[indivial_i, :] = [15.  5. 85. 90.]
606     cord_individual_obj[indivial_i, :] = [16.  4. 46. 50.]
607     cord_individual_obj[indivial_i, :] = [17.  4. 68. 72.]
608     cord_individual_obj[indivial_i, :] = [18.  4. 57. 61.]
609     cord_individual_obj[indivial_i, :] = [19.  5. 40. 45.]
610     cord_individual_obj[indivial_i, :] = [20.  4. 78. 82.]
611     cord_individual_obj[indivial_i, :] = [21.  6. 49. 55.]
612     cord_individual_obj[indivial_i, :] = [22.  5. 64. 69.]
613     cord_individual_obj[indivial_i, :] = [23.  6. 61. 67.]
614     cord_individual_obj[indivial_i, :] = [24.  6. 51. 57.]
615
616
617     min(cord_individual_obj[:, 3]) = 8.0
618     historl_G_best_iter[iter, 3] = 8.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0.  4. 39. 43.]
623     cord_individual_obj[indivial_i, :] = [ 1.  5. 44. 49.]
624     cord_individual_obj[indivial_i, :] = [ 2.  4. 73. 77.]
625     cord_individual_obj[indivial_i, :] = [ 3.  5. 100. 105.]
626     cord_individual_obj[indivial_i, :] = [ 4.  4. 19. 23.]
627     cord_individual_obj[indivial_i, :] = [ 5.  4. 173. 177.]
628     cord_individual_obj[indivial_i, :] = [ 6.  3. 5. 8.]
629     cord_individual_obj[indivial_i, :] = [ 7.  4. 104. 108.]
630     cord_individual_obj[indivial_i, :] = [ 8.  5. 95. 100.]
631     cord_individual_obj[indivial_i, :] = [ 9.  4. 55. 59.]
632     cord_individual_obj[indivial_i, :] = [10.  4. 48. 52.]
633     cord_individual_obj[indivial_i, :] = [11.  5. 42. 47.]
634     cord_individual_obj[indivial_i, :] = [12.  5. 32. 37.]
635     cord_individual_obj[indivial_i, :] = [13.  4. 40. 44.]
636     cord_individual_obj[indivial_i, :] = [14.  4. 34. 38.]
637     cord_individual_obj[indivial_i, :] = [15.  4. 59. 63.]
638     cord_individual_obj[indivial_i, :] = [16.  4. 46. 50.]
639     cord_individual_obj[indivial_i, :] = [17.  4. 48. 52.]
640     cord_individual_obj[indivial_i, :] = [18.  6. 56. 62.]
641     cord_individual_obj[indivial_i, :] = [19.  6. 13. 19.]
642     cord_individual_obj[indivial_i, :] = [20.  5. 30. 35.]
643     cord_individual_obj[indivial_i, :] = [21.  4. 86. 90.]
644     cord_individual_obj[indivial_i, :] = [22.  5. 54. 59.]
645     cord_individual_obj[indivial_i, :] = [23.  4. 79. 83.]
646     cord_individual_obj[indivial_i, :] = [24.  3. 104. 107.]
647
648     min(cord_individual_obj[:, 3]) = 8.0
649     historl_G_best_iter[iter, 3] = 8.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0.  5. 95. 100.]
654     cord_individual_obj[indivial_i, :] = [ 1.  5. 57. 62.]
655     cord_individual_obj[indivial_i, :] = [ 2.  3. 58. 61.]
656     cord_individual_obj[indivial_i, :] = [ 3.  5. 120. 125.]
657     cord_individual_obj[indivial_i, :] = [ 4.  4. 47. 51.]
658     cord_individual_obj[indivial_i, :] = [ 5.  3. 5. 8.]
659     cord_individual_obj[indivial_i, :] = [ 6.  4. 63. 67.]
660     cord_individual_obj[indivial_i, :] = [ 7.  5. 91. 96.]
661     cord_individual_obj[indivial_i, :] = [ 8.  5. 70. 75.]
662     cord_individual_obj[indivial_i, :] = [ 9.  4. 71. 75.]
663     cord_individual_obj[indivial_i, :] = [10.  4. 48. 52.]
664     cord_individual_obj[indivial_i, :] = [11.  7. 41. 48.]
665     cord_individual_obj[indivial_i, :] = [12.  5. 146. 151.]
666     cord_individual_obj[indivial_i, :] = [13.  5. 30. 35.]
667     cord_individual_obj[indivial_i, :] = [14.  5. 79. 84.]
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668 cord_individual_obj[indivial_i, :] = [15. 5. 85. 90.]
669 cord_individual_obj[indivial_i, :] = [16. 4. 46. 50.]
670 cord_individual_obj[indivial_i, :] = [17. 4. 94. 98.]
671 cord_individual_obj[indivial_i, :] = [18. 4. 54. 58.]
672 cord_individual_obj[indivial_i, :] = [19. 6. 13. 19.]
673 cord_individual_obj[indivial_i, :] = [20. 4. 62. 66.]
674 cord_individual_obj[indivial_i, :] = [21. 6. 12. 18.]
675 cord_individual_obj[indivial_i, :] = [22. 5. 60. 65.]
676 cord_individual_obj[indivial_i, :] = [23. 4. 61. 65.]
677 cord_individual_obj[indivial_i, :] = [24. 5. 48. 53.]
678
679 min(cord_individual_obj[:, 3]) = 8.0
680 historl_G_best_iter[iter, 3] = 8.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 110.0
689 Proportion_of_area = 0.10185185185185185
690 BEST_CHROM =
691 berth: [ 3.5 18.5 8.5 24.5 1.5 13. 13.5 7. ]
692 time: [0. 0. 0. 0. 2. 1. 0. 2.]
693 num_QC: [5. 2. 3. 2. 3. 2. 7. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 3.00          Obj1 = 5.00          Obj0 + Obj1 = 8.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 5.00
698 Total index of q during berthing: 485.00
699 Specific arrangement for each vessel:
700 V_id: 0           li: 7.0           xi: 3.5           bow of i: 0.0           tail of i: 7.0           gama_i0: 0.0           gama_i1: 1.0
701 .0             gama_i1 + 1: 2.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work load_i:
702 V_id: 1           li: 3.0           xi: 18.5           bow of i: 17.0           tail of i: 20.0           gama_i0: 0.0           gama_i1: 2
703 .0             gama_i1 + 1: 3.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
704 V_id: 2           li: 3.0           xi: 8.5           bow of i: 7.0           tail of i: 10.0           gama_i0: 0.0           gama_i1: 1.0
705 .0             gama_i1 + 1: 2.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work load_i:
706 V_id: 3           li: 9.0           xi: 24.5           bow of i: 20.0           tail of i: 29.0           gama_i0: 0.0           gama_i1: 3
707 .0             gama_i1 + 1: 4.0           gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 140.0           work
708 V_id: 4           li: 3.0           xi: 1.5           bow of i: 0.0           tail of i: 3.0           gama_i0: 2.0           gama_i1: 3.0
709 .0             gama_i1 + 1: 4.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work load_i:
710 V_id: 5           li: 4.0           xi: 13.0           bow of i: 11.0           tail of i: 15.0           gama_i0: 1.0           gama_i1: 3
711 .0             gama_i1 + 1: 4.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 100.0           work
712 V_id: 6           li: 7.0           xi: 13.5           bow of i: 10.0           tail of i: 17.0           gama_i0: 0.0           gama_i1: 0
713 .0             gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 140.0           work
714 V_id: 7           li: 8.0           xi: 7.0           bow of i: 3.0           tail of i: 11.0           gama_i0: 2.0           gama_i1: 3.0
715 .0             gama_i1 + 1: 4.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work load_i:
716
717 Algorithm finished and the total CPU time: 233 s
718 End
719

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