

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 4. 14. 18.]
81 cord_individual_obj[indivial_i,:] = [17. 3. 2. 5.]
82 cord_individual_obj[indivial_i,:] = [18. 2. 1. 3.]
83 cord_individual_obj[indivial_i,:] = [19. 3. 31. 34.]
84 cord_individual_obj[indivial_i,:] = [20. 2. 68. 70.]
85 cord_individual_obj[indivial_i,:] = [21. 3. 31. 34.]
86 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
87 cord_individual_obj[indivial_i,:] = [23. 4. 35. 39.]
88 cord_individual_obj[indivial_i,:] = [24. 3. 6. 9.]
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. 3. 51. 54.]
96 cord_individual_obj[indivial_i,:] = [ 1. 3. 62. 65.]
97 cord_individual_obj[indivial_i,:] = [ 2. 4. 10. 14.]
98 cord_individual_obj[indivial_i,:] = [ 3. 3. 14. 17.]
99 cord_individual_obj[indivial_i,:] = [ 4. 4. 27. 31.]
100 cord_individual_obj[indivial_i,:] = [ 5. 3. 22. 25.]
101 cord_individual_obj[indivial_i,:] = [ 6. 4. 32. 36.]
102 cord_individual_obj[indivial_i,:] = [ 7. 3. 9. 12.]
103 cord_individual_obj[indivial_i,:] = [ 8. 3. 10. 13.]
104 cord_individual_obj[indivial_i,:] = [ 9. 3. 10. 13.]
105 cord_individual_obj[indivial_i,:] = [10. 3. 20. 23.]
106 cord_individual_obj[indivial_i,:] = [11. 2. 85. 87.]
107 cord_individual_obj[indivial_i,:] = [12. 4. 69. 73.]
108 cord_individual_obj[indivial_i,:] = [13. 4. 27. 31.]
109 cord_individual_obj[indivial_i,:] = [14. 5. 38. 43.]
110 cord_individual_obj[indivial_i,:] = [15. 3. 121. 124.]
111 cord_individual_obj[indivial_i,:] = [16. 3. 27. 30.]
112 cord_individual_obj[indivial_i,:] = [17. 4. 10. 14.]
113 cord_individual_obj[indivial_i,:] = [18. 3. 39. 42.]
114 cord_individual_obj[indivial_i,:] = [19. 3. 49. 52.]
115 cord_individual_obj[indivial_i,:] = [20. 2. 1. 3.]
116 cord_individual_obj[indivial_i,:] = [21. 3. 51. 54.]
117 cord_individual_obj[indivial_i,:] = [22. 5. 52. 57.]
118 cord_individual_obj[indivial_i,:] = [23. 5. 27. 32.]
119 cord_individual_obj[indivial_i,:] = [24. 3. 13. 16.]
120
121 min(cord_individual_obj[:,3]) = 3.0
122 historl_G_best_iter[iter,3] = 3.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 3. 52. 55.]
127 cord_individual_obj[indivial_i,:] = [ 1. 3. 40. 43.]
128 cord_individual_obj[indivial_i,:] = [ 2. 4. 10. 14.]
129 cord_individual_obj[indivial_i,:] = [ 3. 5. 70. 75.]
130 cord_individual_obj[indivial_i,:] = [ 4. 3. 2. 5.]
131 cord_individual_obj[indivial_i,:] = [ 5. 5. 12. 17.]
132 cord_individual_obj[indivial_i,:] = [ 6. 5. 10. 15.]
133 cord_individual_obj[indivial_i,:] = [ 7. 4. 15. 19.]
134 cord_individual_obj[indivial_i,:] = [ 8. 3. 45. 48.]
135 cord_individual_obj[indivial_i,:] = [ 9. 3. 2. 5.]
136 cord_individual_obj[indivial_i,:] = [10. 3. 32. 35.]
137 cord_individual_obj[indivial_i,:] = [11. 3. 90. 93.]
138 cord_individual_obj[indivial_i,:] = [12. 3. 68. 71.]
139 cord_individual_obj[indivial_i,:] = [13. 2. 67. 69.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 32. 36.]
141 cord_individual_obj[indivial_i,:] = [15. 2. 1. 3.]
142 cord_individual_obj[indivial_i,:] = [16. 3. 49. 52.]
143 cord_individual_obj[indivial_i,:] = [17. 4. 29. 33.]
144 cord_individual_obj[indivial_i,:] = [18. 3. 39. 42.]
145 cord_individual_obj[indivial_i,:] = [19. 4. 56. 60.]
146 cord_individual_obj[indivial_i,:] = [20. 4. 57. 61.]
147 cord_individual_obj[indivial_i,:] = [21. 4. 59. 63.]
148 cord_individual_obj[indivial_i,:] = [22. 3. 69. 72.]
149 cord_individual_obj[indivial_i,:] = [23. 5. 20. 25.]
150 cord_individual_obj[indivial_i,:] = [24. 4. 47. 51.]
151
152 min(cord_individual_obj[:,3]) = 3.0
153 historl_G_best_iter[iter,3] = 3.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 2. 27. 29.]
158 cord_individual_obj[indivial_i,:] = [ 1. 3. 62. 65.]
159 cord_individual_obj[indivial_i,:] = [ 2. 4. 57. 61.]
160 cord_individual_obj[indivial_i,:] = [ 3. 3. 14. 17.]
161 cord_individual_obj[indivial_i,:] = [ 4. 3. 32. 35.]
162 cord_individual_obj[indivial_i,:] = [ 5. 3. 22. 25.]
163 cord_individual_obj[indivial_i,:] = [ 6. 5. 52. 57.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 4. 43. 47.]
165 cord_individual_obj[indivial_i, :] = [ 8. 4. 60. 64.]
166 cord_individual_obj[indivial_i, :] = [ 9. 4. 77. 81.]
167 cord_individual_obj[indivial_i, :] = [10. 4. 72. 76.]
168 cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]
169 cord_individual_obj[indivial_i, :] = [12. 4. 57. 61.]
170 cord_individual_obj[indivial_i, :] = [13. 3. 40. 43.]
171 cord_individual_obj[indivial_i, :] = [14. 3. 38. 41.]
172 cord_individual_obj[indivial_i, :] = [15. 5. 122. 127.]
173 cord_individual_obj[indivial_i, :] = [16. 3. 46. 49.]
174 cord_individual_obj[indivial_i, :] = [17. 3. 32. 35.]
175 cord_individual_obj[indivial_i, :] = [18. 3. 69. 72.]
176 cord_individual_obj[indivial_i, :] = [19. 4. 58. 62.]
177 cord_individual_obj[indivial_i, :] = [20. 3. 49. 52.]
178 cord_individual_obj[indivial_i, :] = [21. 4. 49. 53.]
179 cord_individual_obj[indivial_i, :] = [22. 4. 58. 62.]
180 cord_individual_obj[indivial_i, :] = [23. 4. 52. 56.]
181 cord_individual_obj[indivial_i, :] = [24. 3. 55. 58.]
182
183 min(cord_individual_obj[:, 3]) = 3.0
184 historl_G_best_iter[iter, 3] = 3.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 3. 52. 55.]
189 cord_individual_obj[indivial_i, :] = [ 1. 3. 62. 65.]
190 cord_individual_obj[indivial_i, :] = [ 2. 4. 10. 14.]
191 cord_individual_obj[indivial_i, :] = [ 3. 5. 49. 54.]
192 cord_individual_obj[indivial_i, :] = [ 4. 3. 2. 5.]
193 cord_individual_obj[indivial_i, :] = [ 5. 6. 7. 13.]
194 cord_individual_obj[indivial_i, :] = [ 6. 4. 38. 42.]
195 cord_individual_obj[indivial_i, :] = [ 7. 3. 25. 28.]
196 cord_individual_obj[indivial_i, :] = [ 8. 4. 57. 61.]
197 cord_individual_obj[indivial_i, :] = [ 9. 3. 2. 5.]
198 cord_individual_obj[indivial_i, :] = [10. 4. 39. 43.]
199 cord_individual_obj[indivial_i, :] = [11. 3. 70. 73.]
200 cord_individual_obj[indivial_i, :] = [12. 3. 64. 67.]
201 cord_individual_obj[indivial_i, :] = [13. 2. 49. 51.]
202 cord_individual_obj[indivial_i, :] = [14. 3. 31. 34.]
203 cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
204 cord_individual_obj[indivial_i, :] = [16. 3. 49. 52.]
205 cord_individual_obj[indivial_i, :] = [17. 4. 31. 35.]
206 cord_individual_obj[indivial_i, :] = [18. 3. 31. 34.]
207 cord_individual_obj[indivial_i, :] = [19. 4. 73. 77.]
208 cord_individual_obj[indivial_i, :] = [20. 2. 29. 31.]
209 cord_individual_obj[indivial_i, :] = [21. 3. 51. 54.]
210 cord_individual_obj[indivial_i, :] = [22. 3. 31. 34.]
211 cord_individual_obj[indivial_i, :] = [23. 5. 37. 42.]
212 cord_individual_obj[indivial_i, :] = [24. 3. 61. 64.]
213
214 min(cord_individual_obj[:, 3]) = 3.0
215 historl_G_best_iter[iter, 3] = 3.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 3. 21. 24.]
220 cord_individual_obj[indivial_i, :] = [ 1. 3. 62. 65.]
221 cord_individual_obj[indivial_i, :] = [ 2. 4. 52. 56.]
222 cord_individual_obj[indivial_i, :] = [ 3. 3. 14. 17.]
223 cord_individual_obj[indivial_i, :] = [ 4. 3. 10. 13.]
224 cord_individual_obj[indivial_i, :] = [ 5. 2. 31. 33.]
225 cord_individual_obj[indivial_i, :] = [ 6. 3. 10. 13.]
226 cord_individual_obj[indivial_i, :] = [ 7. 4. 43. 47.]
227 cord_individual_obj[indivial_i, :] = [ 8. 4. 119. 123.]
228 cord_individual_obj[indivial_i, :] = [ 9. 3. 14. 17.]
229 cord_individual_obj[indivial_i, :] = [10. 4. 39. 43.]
230 cord_individual_obj[indivial_i, :] = [11. 2. 85. 87.]
231 cord_individual_obj[indivial_i, :] = [12. 4. 15. 19.]
232 cord_individual_obj[indivial_i, :] = [13. 2. 49. 51.]
233 cord_individual_obj[indivial_i, :] = [14. 4. 44. 48.]
234 cord_individual_obj[indivial_i, :] = [15. 5. 122. 127.]
235 cord_individual_obj[indivial_i, :] = [16. 3. 46. 49.]
236 cord_individual_obj[indivial_i, :] = [17. 4. 34. 38.]
237 cord_individual_obj[indivial_i, :] = [18. 4. 69. 73.]
238 cord_individual_obj[indivial_i, :] = [19. 2. 1. 3.]
239 cord_individual_obj[indivial_i, :] = [20. 3. 49. 52.]
240 cord_individual_obj[indivial_i, :] = [21. 3. 51. 54.]
241 cord_individual_obj[indivial_i, :] = [22. 3. 87. 90.]
242 cord_individual_obj[indivial_i, :] = [23. 4. 27. 31.]
243 cord_individual_obj[indivial_i, :] = [24. 4. 52. 56.]
244
245 min(cord_individual_obj[:, 3]) = 3.0
246 historl_G_best_iter[iter, 3] = 3.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0. 3. 52. 55.]
251 cord_individual_obj[indivial_i, :] = [ 1. 3. 40. 43.]
252 cord_individual_obj[indivial_i, :] = [ 2. 3. 26. 29.]
253 cord_individual_obj[indivial_i, :] = [ 3. 4. 49. 53.]
254 cord_individual_obj[indivial_i, :] = [ 4. 3. 79. 82.]
255 cord_individual_obj[indivial_i, :] = [ 5. 5. 68. 73.]
256 cord_individual_obj[indivial_i, :] = [ 6. 4. 20. 24.]
257 cord_individual_obj[indivial_i, :] = [ 7. 4. 28. 32.]
258 cord_individual_obj[indivial_i, :] = [ 8. 3. 69. 72.]
259 cord_individual_obj[indivial_i, :] = [ 9. 3. 20. 23.]
260 cord_individual_obj[indivial_i, :] = [10. 3. 32. 35.]
261 cord_individual_obj[indivial_i, :] = [11. 3. 70. 73.]
262 cord_individual_obj[indivial_i, :] = [12. 4. 57. 61.]
263 cord_individual_obj[indivial_i, :] = [13. 2. 49. 51.]
264 cord_individual_obj[indivial_i, :] = [14. 4. 20. 24.]
265 cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
266 cord_individual_obj[indivial_i, :] = [16. 3. 21. 24.]
267 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
268 cord_individual_obj[indivial_i, :] = [18. 3. 39. 42.]
269 cord_individual_obj[indivial_i, :] = [19. 5. 37. 42.]
270 cord_individual_obj[indivial_i, :] = [20. 4. 49. 53.]
271 cord_individual_obj[indivial_i, :] = [21. 4. 57. 61.]
272 cord_individual_obj[indivial_i, :] = [22. 4. 69. 73.]
273 cord_individual_obj[indivial_i, :] = [23. 5. 21. 26.]
274 cord_individual_obj[indivial_i, :] = [24. 5. 69. 74.]
275

276 min(cord_individual_obj[:, 3]) = 3.0
277 historl_G_best_iter[iter, 3] = 3.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [0. 2. 2. 4.]
282 cord_individual_obj[indivial_i, :] = [ 1. 2. 17. 19.]
283 cord_individual_obj[indivial_i, :] = [ 2. 3. 13. 16.]
284 cord_individual_obj[indivial_i, :] = [ 3. 6. 41. 47.]
285 cord_individual_obj[indivial_i, :] = [ 4. 2. 1. 3.]
286 cord_individual_obj[indivial_i, :] = [ 5. 3. 31. 34.]
287 cord_individual_obj[indivial_i, :] = [ 6. 3. 2. 5.]
288 cord_individual_obj[indivial_i, :] = [ 7. 3. 115. 118.]
289 cord_individual_obj[indivial_i, :] = [ 8. 3. 10. 13.]
290 cord_individual_obj[indivial_i, :] = [ 9. 4. 3. 7.]
291 cord_individual_obj[indivial_i, :] = [10. 2. 2. 4.]
292 cord_individual_obj[indivial_i, :] = [11. 4. 3. 7.]
293 cord_individual_obj[indivial_i, :] = [12. 2. 49. 51.]
294 cord_individual_obj[indivial_i, :] = [13. 3. 32. 35.]
295 cord_individual_obj[indivial_i, :] = [14. 4. 2. 6.]
296 cord_individual_obj[indivial_i, :] = [15. 4. 122. 126.]
297 cord_individual_obj[indivial_i, :] = [16. 5. 45. 50.]
298 cord_individual_obj[indivial_i, :] = [17. 2. 45. 47.]
299 cord_individual_obj[indivial_i, :] = [18. 3. 31. 34.]
300 cord_individual_obj[indivial_i, :] = [19. 4. 50. 54.]
301 cord_individual_obj[indivial_i, :] = [20. 3. 2. 5.]
302 cord_individual_obj[indivial_i, :] = [21. 2. 32. 34.]
303 cord_individual_obj[indivial_i, :] = [22. 2. 9. 11.]
304 cord_individual_obj[indivial_i, :] = [23. 3. 2. 5.]
305 cord_individual_obj[indivial_i, :] = [24. 3. 91. 94.]
306

307 min(cord_individual_obj[:, 3]) = 3.0
308 historl_G_best_iter[iter, 3] = 3.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0. 3. 52. 55.]
313 cord_individual_obj[indivial_i, :] = [ 1. 3. 39. 42.]
314 cord_individual_obj[indivial_i, :] = [ 2. 4. 26. 30.]
315 cord_individual_obj[indivial_i, :] = [ 3. 6. 51. 57.]
316 cord_individual_obj[indivial_i, :] = [ 4. 3. 79. 82.]
317 cord_individual_obj[indivial_i, :] = [ 5. 5. 46. 51.]
318 cord_individual_obj[indivial_i, :] = [ 6. 5. 37. 42.]
319 cord_individual_obj[indivial_i, :] = [ 7. 4. 75. 79.]
320 cord_individual_obj[indivial_i, :] = [ 8. 3. 45. 48.]
321 cord_individual_obj[indivial_i, :] = [ 9. 3. 20. 23.]
322 cord_individual_obj[indivial_i, :] = [10. 4. 57. 61.]
323 cord_individual_obj[indivial_i, :] = [11. 3. 98. 101.]
324 cord_individual_obj[indivial_i, :] = [12. 3. 102. 105.]
325 cord_individual_obj[indivial_i, :] = [13. 2. 32. 34.]
326 cord_individual_obj[indivial_i, :] = [14. 4. 20. 24.]
327 cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
328 cord_individual_obj[indivial_i, :] = [16. 3. 47. 50.]
329 cord_individual_obj[indivial_i, :] = [17. 4. 26. 30.]
330 cord_individual_obj[indivial_i, :] = [18. 2. 49. 51.]
331 cord_individual_obj[indivial_i, :] = [19. 4. 71. 75.]

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unknown

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332     cord_individual_obj[indivial_i,:] = [20. 3. 19. 22.]  
333     cord_individual_obj[indivial_i,:] = [21. 3. 25. 28.]  
334     cord_individual_obj[indivial_i,:] = [22. 5. 36. 41.]  
335     cord_individual_obj[indivial_i,:] = [23. 4. 20. 24.]  
336     cord_individual_obj[indivial_i,:] = [24. 3. 25. 28.]  
337  
338 min(cord_individual_obj[:,3]) = 3.0  
339 historl_G_best_iter[iter,3] = 3.0  
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. 40. 43.]  
345     cord_individual_obj[indivial_i,:] = [ 2. 4. 26. 30.]  
346     cord_individual_obj[indivial_i,:] = [ 3. 3. 49. 52.]  
347     cord_individual_obj[indivial_i,:] = [ 4. 3. 1. 4.]  
348     cord_individual_obj[indivial_i,:] = [ 5. 5. 78. 83.]  
349     cord_individual_obj[indivial_i,:] = [ 6. 5. 53. 58.]  
350     cord_individual_obj[indivial_i,:] = [ 7. 3. 46. 49.]  
351     cord_individual_obj[indivial_i,:] = [ 8. 3. 10. 13.]  
352     cord_individual_obj[indivial_i,:] = [ 9. 4. 2. 6.]  
353     cord_individual_obj[indivial_i,:] = [10. 4. 27. 31.]  
354     cord_individual_obj[indivial_i,:] = [11. 3. 126. 129.]  
355     cord_individual_obj[indivial_i,:] = [12. 2. 1. 3.]  
356     cord_individual_obj[indivial_i,:] = [13. 2. 31. 33.]  
357     cord_individual_obj[indivial_i,:] = [14. 3. 2. 5.]  
358     cord_individual_obj[indivial_i,:] = [15. 4. 122. 126.]  
359     cord_individual_obj[indivial_i,:] = [16. 6. 16. 22.]  
360     cord_individual_obj[indivial_i,:] = [17. 4. 7. 11.]  
361     cord_individual_obj[indivial_i,:] = [18. 3. 39. 42.]  
362     cord_individual_obj[indivial_i,:] = [19. 4. 15. 19.]  
363     cord_individual_obj[indivial_i,:] = [20. 3. 15. 18.]  
364     cord_individual_obj[indivial_i,:] = [21. 3. 37. 40.]  
365     cord_individual_obj[indivial_i,:] = [22. 2. 21. 23.]  
366     cord_individual_obj[indivial_i,:] = [23. 5. 12. 17.]  
367     cord_individual_obj[indivial_i,:] = [24. 3. 47. 50.]  
368  
369 min(cord_individual_obj[:,3]) = 3.0  
370 historl_G_best_iter[iter,3] = 3.0  
371 Begin iteration:  
372  
373 iter = 11  
374     cord_individual_obj[indivial_i,:] = [ 0. 2. 69. 71.]  
375     cord_individual_obj[indivial_i,:] = [ 1. 3. 62. 65.]  
376     cord_individual_obj[indivial_i,:] = [ 2. 4. 26. 30.]  
377     cord_individual_obj[indivial_i,:] = [ 3. 4. 51. 55.]  
378     cord_individual_obj[indivial_i,:] = [ 4. 3. 49. 52.]  
379     cord_individual_obj[indivial_i,:] = [ 5. 5. 58. 63.]  
380     cord_individual_obj[indivial_i,:] = [ 6. 6. 29. 35.]  
381     cord_individual_obj[indivial_i,:] = [ 7. 4. 43. 47.]  
382     cord_individual_obj[indivial_i,:] = [ 8. 4. 79. 83.]  
383     cord_individual_obj[indivial_i,:] = [ 9. 5. 20. 25.]  
384     cord_individual_obj[indivial_i,:] = [10. 4. 57. 61.]  
385     cord_individual_obj[indivial_i,:] = [11. 2. 1. 3.]  
386     cord_individual_obj[indivial_i,:] = [12. 3. 68. 71.]  
387     cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]  
388     cord_individual_obj[indivial_i,:] = [14. 4. 9. 13.]  
389     cord_individual_obj[indivial_i,:] = [15. 3. 32. 35.]  
390     cord_individual_obj[indivial_i,:] = [16. 3. 25. 28.]  
391     cord_individual_obj[indivial_i,:] = [17. 4. 26. 30.]  
392     cord_individual_obj[indivial_i,:] = [18. 2. 49. 51.]  
393     cord_individual_obj[indivial_i,:] = [19. 4. 75. 79.]  
394     cord_individual_obj[indivial_i,:] = [20. 3. 18. 21.]  
395     cord_individual_obj[indivial_i,:] = [21. 4. 37. 41.]  
396     cord_individual_obj[indivial_i,:] = [22. 4. 72. 76.]  
397     cord_individual_obj[indivial_i,:] = [23. 4. 10. 14.]  
398     cord_individual_obj[indivial_i,:] = [24. 5. 27. 32.]  
399  
400 min(cord_individual_obj[:,3]) = 3.0  
401 historl_G_best_iter[iter,3] = 3.0  
402 Begin iteration:  
403  
404 iter = 12  
405     cord_individual_obj[indivial_i,:] = [ 0. 3. 25. 28.]  
406     cord_individual_obj[indivial_i,:] = [ 1. 2. 49. 51.]  
407     cord_individual_obj[indivial_i,:] = [ 2. 5. 27. 32.]  
408     cord_individual_obj[indivial_i,:] = [ 3. 5. 53. 58.]  
409     cord_individual_obj[indivial_i,:] = [ 4. 3. 2. 5.]  
410     cord_individual_obj[indivial_i,:] = [ 5. 5. 26. 31.]  
411     cord_individual_obj[indivial_i,:] = [ 6. 5. 10. 15.]  
412     cord_individual_obj[indivial_i,:] = [ 7. 3. 78. 81.]  
413     cord_individual_obj[indivial_i,:] = [ 8. 2. 1. 3.]  
414     cord_individual_obj[indivial_i,:] = [ 9. 4. 2. 6.]  
415     cord_individual_obj[indivial_i,:] = [10. 3. 14. 17.]
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```

416 cord_individual_obj[indivial_i,:] = [11. 3. 62. 65.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 21. 24.]
418 cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]
419 cord_individual_obj[indivial_i,:] = [14. 4. 14. 18.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 50. 53.]
421 cord_individual_obj[indivial_i,:] = [16. 4. 10. 14.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 7. 10.]
423 cord_individual_obj[indivial_i,:] = [18. 2. 49. 51.]
424 cord_individual_obj[indivial_i,:] = [19. 3. 31. 34.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 15. 18.]
426 cord_individual_obj[indivial_i,:] = [21. 2. 32. 34.]
427 cord_individual_obj[indivial_i,:] = [22. 3. 53. 56.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 10. 13.]
429 cord_individual_obj[indivial_i,:] = [24. 2. 61. 63.]
430
431 min(cord_individual_obj[:,3]) = 3.0
432 histol_G_best_iter[iter,3] = 3.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 2. 25. 27.]
437 cord_individual_obj[indivial_i,:] = [ 1. 2. 49. 51.]
438 cord_individual_obj[indivial_i,:] = [ 2. 4. 26. 30.]
439 cord_individual_obj[indivial_i,:] = [ 3. 3. 33. 36.]
440 cord_individual_obj[indivial_i,:] = [ 4. 3. 2. 5.]
441 cord_individual_obj[indivial_i,:] = [ 5. 5. 56. 61.]
442 cord_individual_obj[indivial_i,:] = [ 6. 5. 43. 48.]
443 cord_individual_obj[indivial_i,:] = [ 7. 2. 1. 3.]
444 cord_individual_obj[indivial_i,:] = [ 8. 3. 69. 72.]
445 cord_individual_obj[indivial_i,:] = [ 9. 4. 2. 6.]
446 cord_individual_obj[indivial_i,:] = [10. 4. 21. 25.]
447 cord_individual_obj[indivial_i,:] = [11. 3. 80. 83.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 146. 149.]
449 cord_individual_obj[indivial_i,:] = [13. 3. 22. 25.]
450 cord_individual_obj[indivial_i,:] = [14. 3. 2. 5.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 46. 49.]
452 cord_individual_obj[indivial_i,:] = [16. 4. 10. 14.]
453 cord_individual_obj[indivial_i,:] = [17. 3. 39. 42.]
454 cord_individual_obj[indivial_i,:] = [18. 2. 49. 51.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 33. 37.]
456 cord_individual_obj[indivial_i,:] = [20. 2. 40. 42.]
457 cord_individual_obj[indivial_i,:] = [21. 4. 37. 41.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
459 cord_individual_obj[indivial_i,:] = [23. 4. 57. 61.]
460 cord_individual_obj[indivial_i,:] = [24. 5. 49. 54.]
461
462 min(cord_individual_obj[:,3]) = 3.0
463 histol_G_best_iter[iter,3] = 3.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 4. 11. 15.]
468 cord_individual_obj[indivial_i,:] = [ 1. 3. 40. 43.]
469 cord_individual_obj[indivial_i,:] = [ 2. 4. 27. 31.]
470 cord_individual_obj[indivial_i,:] = [ 3. 3. 13. 16.]
471 cord_individual_obj[indivial_i,:] = [ 4. 2. 97. 99.]
472 cord_individual_obj[indivial_i,:] = [ 5. 5. 46. 51.]
473 cord_individual_obj[indivial_i,:] = [ 6. 5. 20. 25.]
474 cord_individual_obj[indivial_i,:] = [ 7. 3. 46. 49.]
475 cord_individual_obj[indivial_i,:] = [ 8. 3. 69. 72.]
476 cord_individual_obj[indivial_i,:] = [ 9. 4. 11. 15.]
477 cord_individual_obj[indivial_i,:] = [10. 3. 20. 23.]
478 cord_individual_obj[indivial_i,:] = [11. 3. 70. 73.]
479 cord_individual_obj[indivial_i,:] = [12. 2. 1. 3.]
480 cord_individual_obj[indivial_i,:] = [13. 2. 49. 51.]
481 cord_individual_obj[indivial_i,:] = [14. 3. 9. 12.]
482 cord_individual_obj[indivial_i,:] = [15. 5. 122. 127.]
483 cord_individual_obj[indivial_i,:] = [16. 3. 21. 24.]
484 cord_individual_obj[indivial_i,:] = [17. 3. 25. 28.]
485 cord_individual_obj[indivial_i,:] = [18. 2. 49. 51.]
486 cord_individual_obj[indivial_i,:] = [19. 4. 43. 47.]
487 cord_individual_obj[indivial_i,:] = [20. 4. 57. 61.]
488 cord_individual_obj[indivial_i,:] = [21. 4. 57. 61.]
489 cord_individual_obj[indivial_i,:] = [22. 4. 69. 73.]
490 cord_individual_obj[indivial_i,:] = [23. 5. 21. 26.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 37. 40.]
492
493 min(cord_individual_obj[:,3]) = 3.0
494 histol_G_best_iter[iter,3] = 3.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 2. 109. 111.]
499 cord_individual_obj[indivial_i,:] = [ 1. 3. 40. 43.]

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500 cord_individual_obj[indivial_i, :] = [ 2. 4. 26. 30.]
501 cord_individual_obj[indivial_i, :] = [ 3. 6. 29. 35.]
502 cord_individual_obj[indivial_i, :] = [4. 3. 2. 5.]
503 cord_individual_obj[indivial_i, :] = [ 5. 5. 34. 39.]
504 cord_individual_obj[indivial_i, :] = [ 6. 6. 29. 35.]
505 cord_individual_obj[indivial_i, :] = [ 7. 3. 31. 34.]
506 cord_individual_obj[indivial_i, :] = [ 8. 3. 10. 13.]
507 cord_individual_obj[indivial_i, :] = [9. 3. 2. 5.]
508 cord_individual_obj[indivial_i, :] = [10. 3. 2. 5.]
509 cord_individual_obj[indivial_i, :] = [11. 3. 102. 105.]
510 cord_individual_obj[indivial_i, :] = [12. 4. 69. 73.]
511 cord_individual_obj[indivial_i, :] = [13. 2. 31. 33.]
512 cord_individual_obj[indivial_i, :] = [14. 5. 2. 7.]
513 cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
514 cord_individual_obj[indivial_i, :] = [16. 4. 25. 29.]
515 cord_individual_obj[indivial_i, :] = [17. 3. 9. 12.]
516 cord_individual_obj[indivial_i, :] = [18. 3. 39. 42.]
517 cord_individual_obj[indivial_i, :] = [19. 3. 49. 52.]
518 cord_individual_obj[indivial_i, :] = [20. 3. 9. 12.]
519 cord_individual_obj[indivial_i, :] = [21. 2. 32. 34.]
520 cord_individual_obj[indivial_i, :] = [22. 2. 33. 35.]
521 cord_individual_obj[indivial_i, :] = [23. 5. 18. 23.]
522 cord_individual_obj[indivial_i, :] = [24. 3. 47. 50.]
523
524 min(cord_individual_obj[:, 3]) = 3.0
525 histol_G_best_iter[iter, 3] = 3.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [0. 2. 1. 3.]
530 cord_individual_obj[indivial_i, :] = [ 1. 3. 62. 65.]
531 cord_individual_obj[indivial_i, :] = [ 2. 3. 87. 90.]
532 cord_individual_obj[indivial_i, :] = [ 3. 3. 14. 17.]
533 cord_individual_obj[indivial_i, :] = [ 4. 3. 22. 25.]
534 cord_individual_obj[indivial_i, :] = [ 5. 4. 57. 61.]
535 cord_individual_obj[indivial_i, :] = [ 6. 3. 10. 13.]
536 cord_individual_obj[indivial_i, :] = [ 7. 4. 43. 47.]
537 cord_individual_obj[indivial_i, :] = [ 8. 4. 52. 56.]
538 cord_individual_obj[indivial_i, :] = [ 9. 4. 79. 83.]
539 cord_individual_obj[indivial_i, :] = [10. 4. 63. 67.]
540 cord_individual_obj[indivial_i, :] = [11. 3. 87. 90.]
541 cord_individual_obj[indivial_i, :] = [12. 3. 68. 71.]
542 cord_individual_obj[indivial_i, :] = [13. 2. 19. 21.]
543 cord_individual_obj[indivial_i, :] = [14. 3. 22. 25.]
544 cord_individual_obj[indivial_i, :] = [15. 4. 122. 126.]
545 cord_individual_obj[indivial_i, :] = [16. 3. 10. 13.]
546 cord_individual_obj[indivial_i, :] = [17. 4. 27. 31.]
547 cord_individual_obj[indivial_i, :] = [18. 4. 69. 73.]
548 cord_individual_obj[indivial_i, :] = [19. 4. 49. 53.]
549 cord_individual_obj[indivial_i, :] = [20. 3. 77. 80.]
550 cord_individual_obj[indivial_i, :] = [21. 3. 77. 80.]
551 cord_individual_obj[indivial_i, :] = [22. 5. 68. 73.]
552 cord_individual_obj[indivial_i, :] = [23. 4. 49. 53.]
553 cord_individual_obj[indivial_i, :] = [24. 3. 49. 52.]
554
555 min(cord_individual_obj[:, 3]) = 3.0
556 histol_G_best_iter[iter, 3] = 3.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [ 0. 3. 26. 29.]
561 cord_individual_obj[indivial_i, :] = [ 1. 2. 49. 51.]
562 cord_individual_obj[indivial_i, :] = [ 2. 4. 57. 61.]
563 cord_individual_obj[indivial_i, :] = [ 3. 3. 13. 16.]
564 cord_individual_obj[indivial_i, :] = [ 4. 2. 97. 99.]
565 cord_individual_obj[indivial_i, :] = [ 5. 5. 58. 63.]
566 cord_individual_obj[indivial_i, :] = [ 6. 5. 20. 25.]
567 cord_individual_obj[indivial_i, :] = [ 7. 3. 46. 49.]
568 cord_individual_obj[indivial_i, :] = [ 8. 4. 69. 73.]
569 cord_individual_obj[indivial_i, :] = [ 9. 4. 11. 15.]
570 cord_individual_obj[indivial_i, :] = [10. 4. 27. 31.]
571 cord_individual_obj[indivial_i, :] = [11. 3. 70. 73.]
572 cord_individual_obj[indivial_i, :] = [12. 4. 69. 73.]
573 cord_individual_obj[indivial_i, :] = [13. 3. 40. 43.]
574 cord_individual_obj[indivial_i, :] = [14. 3. 9. 12.]
575 cord_individual_obj[indivial_i, :] = [15. 2. 1. 3.]
576 cord_individual_obj[indivial_i, :] = [16. 4. 49. 53.]
577 cord_individual_obj[indivial_i, :] = [17. 3. 25. 28.]
578 cord_individual_obj[indivial_i, :] = [18. 3. 39. 42.]
579 cord_individual_obj[indivial_i, :] = [19. 4. 38. 42.]
580 cord_individual_obj[indivial_i, :] = [20. 3. 49. 52.]
581 cord_individual_obj[indivial_i, :] = [21. 3. 49. 52.]
582 cord_individual_obj[indivial_i, :] = [22. 4. 69. 73.]
583 cord_individual_obj[indivial_i, :] = [23. 5. 21. 26.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 5. 69. 74.]  
585  
586     min(cord_individual_obj[:, 3]) = 3.0  
587     historl_G_best_iter[iter, 3] = 3.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 3. 27. 30.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 2. 49. 51.]  
593     cord_individual_obj[indivial_i, :] = [2. 4. 3. 7.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 4. 86. 90.]  
595     cord_individual_obj[indivial_i, :] = [4. 2. 1. 3.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 5. 56. 61.]  
597     cord_individual_obj[indivial_i, :] = [6. 5. 2. 7.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 3. 129. 132.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 3. 20. 23.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 3. 2. 5.]  
601     cord_individual_obj[indivial_i, :] = [10. 2. 14. 16.]  
602     cord_individual_obj[indivial_i, :] = [11. 3. 84. 87.]  
603     cord_individual_obj[indivial_i, :] = [12. 3. 117. 120.]  
604     cord_individual_obj[indivial_i, :] = [13. 2. 31. 33.]  
605     cord_individual_obj[indivial_i, :] = [14. 3. 2. 5.]  
606     cord_individual_obj[indivial_i, :] = [15. 5. 122. 127.]  
607     cord_individual_obj[indivial_i, :] = [16. 4. 42. 46.]  
608     cord_individual_obj[indivial_i, :] = [17. 2. 15. 17.]  
609     cord_individual_obj[indivial_i, :] = [18. 3. 39. 42.]  
610     cord_individual_obj[indivial_i, :] = [19. 4. 48. 52.]  
611     cord_individual_obj[indivial_i, :] = [20. 4. 3. 7.]  
612     cord_individual_obj[indivial_i, :] = [21. 3. 18. 21.]  
613     cord_individual_obj[indivial_i, :] = [22. 2. 21. 23.]  
614     cord_individual_obj[indivial_i, :] = [23. 5. 12. 17.]  
615     cord_individual_obj[indivial_i, :] = [24. 3. 47. 50.]  
616  
617     min(cord_individual_obj[:, 3]) = 3.0  
618     historl_G_best_iter[iter, 3] = 3.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 4. 39. 43.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 3. 39. 42.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 5. 11. 16.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 3. 49. 52.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 3. 79. 82.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 5. 46. 51.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 4. 14. 18.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 2. 1. 3.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 3. 10. 13.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 3. 22. 25.]  
632     cord_individual_obj[indivial_i, :] = [10. 3. 20. 23.]  
633     cord_individual_obj[indivial_i, :] = [11. 3. 154. 157.]  
634     cord_individual_obj[indivial_i, :] = [12. 4. 78. 82.]  
635     cord_individual_obj[indivial_i, :] = [13. 2. 32. 34.]  
636     cord_individual_obj[indivial_i, :] = [14. 5. 2. 7.]  
637     cord_individual_obj[indivial_i, :] = [15. 3. 32. 35.]  
638     cord_individual_obj[indivial_i, :] = [16. 3. 25. 28.]  
639     cord_individual_obj[indivial_i, :] = [17. 3. 43. 46.]  
640     cord_individual_obj[indivial_i, :] = [18. 2. 49. 51.]  
641     cord_individual_obj[indivial_i, :] = [19. 4. 28. 32.]  
642     cord_individual_obj[indivial_i, :] = [20. 3. 13. 16.]  
643     cord_individual_obj[indivial_i, :] = [21. 3. 43. 46.]  
644     cord_individual_obj[indivial_i, :] = [22. 4. 62. 66.]  
645     cord_individual_obj[indivial_i, :] = [23. 4. 50. 54.]  
646     cord_individual_obj[indivial_i, :] = [24. 5. 27. 32.]  
647  
648     min(cord_individual_obj[:, 3]) = 3.0  
649     historl_G_best_iter[iter, 3] = 3.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 4. 11. 15.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 3. 40. 43.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 3. 57. 60.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 4. 52. 56.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 2. 67. 69.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 5. 58. 63.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 3. 46. 49.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 4. 60. 64.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 4. 11. 15.]  
663     cord_individual_obj[indivial_i, :] = [10. 4. 21. 25.]  
664     cord_individual_obj[indivial_i, :] = [11. 2. 1. 3.]  
665     cord_individual_obj[indivial_i, :] = [12. 3. 68. 71.]  
666     cord_individual_obj[indivial_i, :] = [13. 3. 40. 43.]  
667     cord_individual_obj[indivial_i, :] = [14. 3. 9. 12.]
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668 cord_individual_obj[indivial_i, :] = [ 15. 5. 122. 127.]
669 cord_individual_obj[indivial_i, :] = [16. 4. 49. 53.]
670 cord_individual_obj[indivial_i, :] = [17. 3. 25. 28.]
671 cord_individual_obj[indivial_i, :] = [18. 3. 26. 29.]
672 cord_individual_obj[indivial_i, :] = [19. 5. 37. 42.]
673 cord_individual_obj[indivial_i, :] = [20. 4. 49. 53.]
674 cord_individual_obj[indivial_i, :] = [21. 3. 57. 60.]
675 cord_individual_obj[indivial_i, :] = [22. 4. 58. 62.]
676 cord_individual_obj[indivial_i, :] = [23. 5. 21. 26.]
677 cord_individual_obj[indivial_i, :] = [24. 3. 37. 40.]
678
679 min(cord_individual_obj[:, 3]) = 3.0
680 historl_G_best_iter[iter, 3] = 3.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 78.0
689 Proportion_of_area = 0.07222222222222222
690 BEST_CHROM =
691     berth: [22.5 9.5 24. 1.5 16.5 4.5]
692     time: [0. 0. 1. 0. 0. 0.]
693     num_QC: [3. 5. 3. 3. 5. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 2.00          Obj1 = 1.00          Obj0 + Obj1 = 3.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 1.00
698 Total index of q during berthing: 369.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 5.0           xi: 22.5           bow of i: 20.0           tail of i: 25.0           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: 60.0           work
    load_i: 60.0       work load gap_i: 0
701
    V_id: 1           li: 7.0           xi: 9.5           bow of i: 6.0           tail of i: 13.0           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
702
    V_id: 2           li: 8.0           xi: 24.0           bow of i: 20.0           tail of i: 28.0           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: 120.0           work
    load_i: 120.0      work load gap_i: 0
703
    V_id: 3           li: 3.0           xi: 1.5           bow of i: 0.0           tail of i: 3.0           gama_i0: 0.0           gama_i1: 2.0
    .0             gama_i1 + 1: 3.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 160.0           work load_i:
    160.0       work load gap_i: 0
704
    V_id: 4           li: 7.0           xi: 16.5           bow of i: 13.0           tail of i: 20.0           gama_i0: 0.0           gama_i1: 1
    .0             gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work
    load_i: 120.0      work load gap_i: 0
705
    V_id: 5           li: 3.0           xi: 4.5           bow of i: 3.0           tail of i: 6.0           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: 120.0           work load_i:
    120.0       work load gap_i: 0
706
707 Algorithm finished and the total CPU time: 167 s
708 End
709

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