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Outlier Detection using Cuckoo Search Algorithm
Choose dataset type (1 for synthetic, 2 for custom data): 1
Iteration 1/100 - Best Threshold: 0.400 | Best Fitness: 300.0
Iteration 2/100 - Best Threshold: 0.401 | Best Fitness: 300.0
Iteration 3/100 - Best Threshold: 0.389 | Best Fitness: 300.0
Iteration 4/100 - Best Threshold: 0.389 | Best Fitness: 300.0
Iteration 5/100 - Best Threshold: 0.379 | Best Fitness: 300.0
Iteration 6/100 - Best Threshold: 0.376 | Best Fitness: 300.0
Iteration 7/100 - Best Threshold: 0.364 | Best Fitness: 300.0
Iteration 8/100 - Best Threshold: 0.369 | Best Fitness: 300.0
Iteration 9/100 - Best Threshold: 0.385 | Best Fitness: 300.0
Iteration 10/100 - Best Threshold: 0.404 | Best Fitness: 300.0
Iteration 11/100 - Best Threshold: 0.389 | Best Fitness: 300.0
Iteration 12/100 - Best Threshold: 0.389 | Best Fitness: 300.0
Iteration 13/100 - Best Threshold: 0.389 | Best Fitness: 300.0
Iteration 14/100 - Best Threshold: 0.398 | Best Fitness: 300.0
Iteration 15/100 - Best Threshold: 0.398 | Best Fitness: 300.0
Iteration 16/100 - Best Threshold: 0.398 | Best Fitness: 300.0
Iteration 17/100 - Best Threshold: 0.398 | Best Fitness: 300.0
Iteration 18/100 - Best Threshold: 0.398 | Best Fitness: 300.0
Iteration 19/100 - Best Threshold: 0.386 | Best Fitness: 300.0
Iteration 20/100 - Best Threshold: 0.388 | Best Fitness: 300.0
Iteration 21/100 - Best Threshold: 0.388 | Best Fitness: 300.0
Iteration 22/100 - Best Threshold: 0.381 | Best Fitness: 300.0
Iteration 23/100 - Best Threshold: 0.374 | Best Fitness: 300.0
Iteration 24/100 - Best Threshold: 0.350 | Best Fitness: 300.0
Iteration 25/100 - Best Threshold: 0.361 | Best Fitness: 300.0
Iteration 26/100 - Best Threshold: 0.366 | Best Fitness: 300.0
Iteration 27/100 - Best Threshold: 0.361 | Best Fitness: 300.0
Iteration 28/100 - Best Threshold: 0.361 | Best Fitness: 300.0
Iteration 29/100 - Best Threshold: 0.361 | Best Fitness: 300.0
Iteration 30/100 - Best Threshold: 0.364 | Best Fitness: 300.0
Iteration 31/100 - Best Threshold: 0.364 | Best Fitness: 300.0
Iteration 32/100 - Best Threshold: 0.362 | Best Fitness: 300.0
Iteration 33/100 - Best Threshold: 0.362 | Best Fitness: 300.0
Iteration 34/100 - Best Threshold: 0.362 | Best Fitness: 300.0
Iteration 35/100 - Best Threshold: 0.373 | Best Fitness: 300.0
Iteration 36/100 - Best Threshold: 0.378 | Best Fitness: 300.0
Iteration 37/100 - Best Threshold: 0.392 | Best Fitness: 300.0
Iteration 38/100 - Best Threshold: 0.392 | Best Fitness: 300.0
Iteration 39/100 - Best Threshold: 0.386 | Best Fitness: 300.0
Iteration 40/100 - Best Threshold: 0.381 | Best Fitness: 300.0
Iteration 41/100 - Best Threshold: 0.378 | Best Fitness: 300.0
Iteration 42/100 - Best Threshold: 0.399 | Best Fitness: 300.0
Iteration 43/100 - Best Threshold: 0.399 | Best Fitness: 300.0
Iteration 44/100 - Best Threshold: 0.399 | Best Fitness: 300.0
Iteration 45/100 - Best Threshold: 0.416 | Best Fitness: 300.0
Iteration 46/100 - Best Threshold: 0.405 | Best Fitness: 300.0
Iteration 47/100 - Best Threshold: 0.400 | Best Fitness: 300.0
Iteration 48/100 - Best Threshold: 0.400 | Best Fitness: 300.0
Iteration 49/100 - Best Threshold: 0.400 | Best Fitness: 300.0
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Iteration 70/100 - Best Threshold: 0.421 | Best Fitness: 300.0
Iteration 71/100 - Best Threshold: 0.422 | Best Fitness: 300.0
Iteration 72/100 - Best Threshold: 0.406 | Best Fitness: 300.0
Iteration 73/100 - Best Threshold: 0.410 | Best Fitness: 300.0
Iteration 74/100 - Best Threshold: 0.415 | Best Fitness: 300.0
Iteration 75/100 - Best Threshold: 0.425 | Best Fitness: 300.0
Iteration 76/100 - Best Threshold: 0.427 | Best Fitness: 300.0
Iteration 77/100 - Best Threshold: 0.422 | Best Fitness: 300.0
Iteration 78/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 79/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 80/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 81/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 82/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 83/100 - Best Threshold: 0.444 | Best Fitness: 300.0
Iteration 84/100 - Best Threshold: 0.440 | Best Fitness: 300.0
Iteration 85/100 - Best Threshold: 0.458 | Best Fitness: 300.0
Iteration 86/100 - Best Threshold: 0.448 | Best Fitness: 300.0
Iteration 87/100 - Best Threshold: 0.453 | Best Fitness: 300.0
Iteration 88/100 - Best Threshold: 0.448 | Best Fitness: 300.0
Iteration 89/100 - Best Threshold: 0.448 | Best Fitness: 300.0
Iteration 90/100 - Best Threshold: 0.448 | Best Fitness: 300.0
Iteration 91/100 - Best Threshold: 0.450 | Best Fitness: 300.0
Iteration 92/100 - Best Threshold: 0.429 | Best Fitness: 300.0
Iteration 93/100 - Best Threshold: 0.430 | Best Fitness: 300.0
Iteration 94/100 - Best Threshold: 0.435 | Best Fitness: 300.0
Iteration 95/100 - Best Threshold: 0.435 | Best Fitness: 300.0
Iteration 96/100 - Best Threshold: 0.432 | Best Fitness: 300.0
Iteration 97/100 - Best Threshold: 0.427 | Best Fitness: 300.0
Iteration 98/100 - Best Threshold: 0.440 | Best Fitness: 300.0
Iteration 99/100 - Best Threshold: 0.440 | Best Fitness: 300.0
Iteration 100/100 - Best Threshold: 0.430 | Best Fitness: 300.0

Best Threshold for Outlier Detection: 0.430
Number of Outliers Detected: 300.0
Outliers detected at indices: [  0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17
  18  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35
  36  37  38  39  40  41  42  43  44  45  46  47  48  49  50  51  52  53
  54  55  56  57  58  59  60  61  62  63  64  65  66  67  68  69  70  71
  72  73  74  75  76  77  78  79  80  81  82  83  84  85  86  87  88  89
  90  91  92  93  94  95  96  97  98  99 100 101 102 103 104 105 106 107
 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125
 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143
 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161
 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179
 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197
 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215
 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233
 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251
 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269
 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287
 288 289 290 291 292 293 294 295 296 297 298 299]
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