Python file: **XOs\_Rank**  (from Mariana parallel with original fitness)

Testing Crossovers

**Fixed:** rank\_sel swap\_mutation Pop=500 Gens =300

Running time aprox min

A graph of a number of different colored lines

Description automatically generated

Run #1, Generation #300: Best Fitness: 809, Time: 151.19 seconds

Run #1, Generation #300: Best Fitness: 849, Time: 151.24 seconds

Run #1, Generation #300: Best Fitness: 807, Time: 183.21 seconds

Run #1, Generation #300: Best Fitness: 694, Time: 222.88 seconds

Run #2, Generation #300: Best Fitness: 840, Time: 178.02 seconds

Run #2, Generation #300: Best Fitness: 849, Time: 178.92 seconds

Run #2, Generation #300: Best Fitness: 842, Time: 202.26 seconds

Run #2, Generation #300: Best Fitness: 682, Time: 228.31 seconds

Run #3, Generation #300: Best Fitness: 831, Time: 165.24 seconds

Run #3, Generation #300: Best Fitness: 840, Time: 164.17 seconds

Run #3, Generation #300: Best Fitness: 833, Time: 171.15 seconds

Run #4, Generation #300: Best Fitness: 849, Time: 141.68 seconds

Run #4, Generation #300: Best Fitness: 833, Time: 141.82 seconds

Run #3, Generation #300: Best Fitness: 693, Time: 194.21 seconds

Run #4, Generation #300: Best Fitness: 800, Time: 155.79 seconds

Run #5, Generation #300: Best Fitness: 833, Time: 132.95 seconds

Run #5, Generation #300: Best Fitness: 839, Time: 133.07 seconds

Run #4, Generation #300: Best Fitness: 693, Time: 179.45 seconds

Run #5, Generation #300: Best Fitness: 832, Time: 152.07 seconds

Run #6, Generation #300: Best Fitness: 810, Time: 132.52 seconds

Run #6, Generation #300: Best Fitness: 808, Time: 132.78 seconds

Run #5, Generation #300: Best Fitness: 697, Time: 178.37 seconds

Run #6, Generation #300: Best Fitness: 841, Time: 151.94 seconds

Run #7, Generation #300: Best Fitness: 859, Time: 132.28 seconds

Run #7, Generation #300: Best Fitness: 824, Time: 133.04 seconds

Run #8, Generation #300: Best Fitness: 817, Time: 131.3 seconds

Run #8, Generation #300: Best Fitness: 834, Time: 131.43 seconds

Run #7, Generation #300: Best Fitness: 826, Time: 150.1 seconds

Run #6, Generation #300: Best Fitness: 696, Time: 176.26 seconds

Run #9, Generation #300: Best Fitness: 847, Time: 131.66 seconds

Run #9, Generation #300: Best Fitness: 824, Time: 131.96 seconds

Run #8, Generation #300: Best Fitness: 819, Time: 150.56 seconds

Run #7, Generation #300: Best Fitness: 699, Time: 177.52 seconds

Run #10, Generation #300: Best Fitness: 834, Time: 132.67 seconds

Run #10, Generation #300: Best Fitness: 841, Time: 133.15 seconds

Run #9, Generation #300: Best Fitness: 828, Time: 152.38 seconds

Run #8, Generation #300: Best Fitness: 689, Time: 179.31 seconds

Run #10, Generation #300: Best Fitness: 832, Time: 153.14 seconds

Run #1, Generation #300: Best Fitness: 693, Time: 210.34 seconds

Run #1, Generation #300: Best Fitness: 841, Time: 228.77 seconds

Run #9, Generation #300: Best Fitness: 688, Time: 178.77 seconds

Run #2, Generation #300: Best Fitness: 687, Time: 209.13 seconds

Run #1, Generation #300: Best Fitness: 529, Time: 235.7 seconds

Run #2, Generation #300: Best Fitness: 840, Time: 226.75 seconds

Run #10, Generation #300: Best Fitness: 696, Time: 177.54 seconds

Run #3, Generation #300: Best Fitness: 693, Time: 186.0 seconds

Run #2, Generation #300: Best Fitness: 516, Time: 208.36 seconds

Run #3, Generation #300: Best Fitness: 861, Time: 196.46 seconds

Run #4, Generation #300: Best Fitness: 689, Time: 176.48 seconds

Run #3, Generation #300: Best Fitness: 512, Time: 199.35 seconds

Run #4, Generation #300: Best Fitness: 855, Time: 192.83 seconds

Run #5, Generation #300: Best Fitness: 699, Time: 176.41 seconds

Run #4, Generation #300: Best Fitness: 523, Time: 200.33 seconds

Run #5, Generation #300: Best Fitness: 859, Time: 192.06 seconds

Run #6, Generation #300: Best Fitness: 692, Time: 176.39 seconds

Run #6, Generation #300: Best Fitness: 848, Time: 192.24 seconds

Run #5, Generation #300: Best Fitness: 514, Time: 200.67 seconds

Run #7, Generation #300: Best Fitness: 698, Time: 176.2 seconds

Run #7, Generation #300: Best Fitness: 855, Time: 191.67 seconds

Run #6, Generation #300: Best Fitness: 516, Time: 199.22 seconds

Run #8, Generation #300: Best Fitness: 694, Time: 176.63 seconds

Run #8, Generation #300: Best Fitness: 858, Time: 191.74 seconds

Run #7, Generation #300: Best Fitness: 503, Time: 200.45 seconds

Run #9, Generation #300: Best Fitness: 694, Time: 176.8 seconds

Run #9, Generation #300: Best Fitness: 882, Time: 193.64 seconds

Run #8, Generation #300: Best Fitness: **496**, Time: 201.39 seconds

Run #10, Generation #300: Best Fitness: 689, Time: 178.87 seconds

Run #10, Generation #300: Best Fitness: 865, Time: 202.31 seconds

Run #9, Generation #300: Best Fitness: 505, Time: 237.38 seconds

Run #10, Generation #300: Best Fitness: 515, Time: 325.61 seconds