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COGS 160
Genetic Algorithms

Using Genetic Algorithms for TSP

For this project, I used Genetic Algorithms to solve a Traveling Salesman Problem. I used a GA I had created, with an Ordered Crossover function to take the top 20 cities in the United States, and try to find their optimal travel route. To make sure my algorithm worked, I plotted the distance per generation, seeing that it decreases each generation (meaning the GA is working properly. Thus, Figure 5 shows the Fitness vs Generations plot of my GA from this section, and Figure 6 Shows my Distance vs Generations plot.

Figure 5: Fitness vs Generations

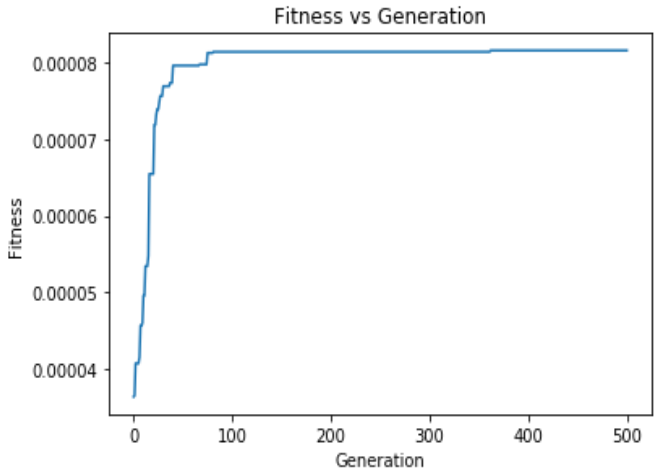
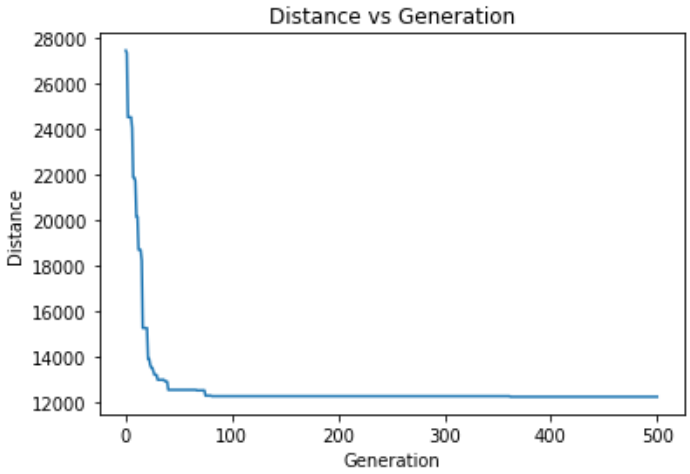


Figure 6: Distance vs Generations



Finally, Figure 7 shows the TSP Final Route Plot! My initial distance ended up being 26,347.41 and final distance ended up being 11,851.85. The order of the cities it gave me was:

San Francisco - Phoenix - Fort Worth - Dallas - Houston - Jacksonville - Charlotte - Philly - New York - Detroit - Columbus - Indianapolis - Chicago - Memphis - Austin - San Antonio - El Paso - San Diego - Los Angeles - San Jose.

Figure 7: TSP Final Route Plot

Initial Distance: 26,347.41

Final Distance: 11,851.85