

Task for Machine Learning Internship at Rivi

Please write in 100-200 words how you think that your GA implementation compares to Ant Colony Optimization to solve the Travelling Salesman Problem.

A **genetic algorithm** is a search heuristic algorithm which reflects the process of natural selection where the fittest individuals are selected for reproduction in order to produce offspring of the next generation and then we find the most fittest solution to our optimization problem.

In ACO, a set of software agents called *artificial ants* search for good solutions to a given optimization problem. The artificial ants incrementally build solutions by moving on the graph. The solution construction process is stochastic and is biased by a *pheromone model*, that is, a set of parameters associated with graph components (either nodes or edges) whose values are modified at runtime by the ants.

The advantage for Genetic Algorithm is the small run time against the large required time by Ant Colony Optimization. The total number of iterations required to give the solution in Genetic Algorithm is comparatively less than the total number of iterations required in Ant Colony Optimization.

So, Genetic Algorithm is better for solving Travelling Salesman Problem than Ant Colony Optimization Problem.