

Topic Coverage Tags: Evolution, Evolutionary Algorithm, Population, Fitness Function, Crossover, Mutation, Offspring, Exploration, and, Exploitation.

Evolutionary Algorithm:

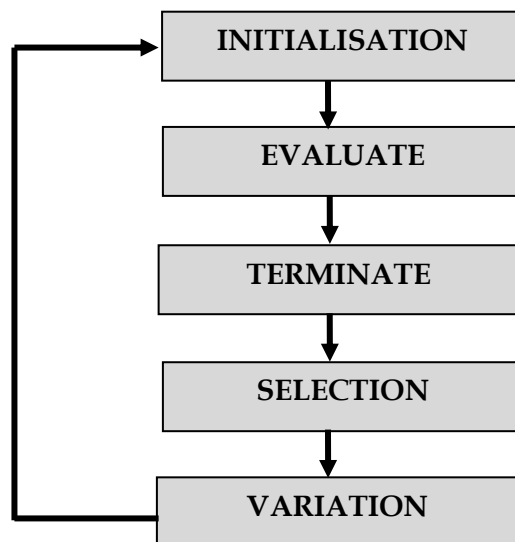
Evolutionary Algorithm is a generic population based metaheuristic algorithm. It is the process of getting the most out of all and inspired by the notion of **survival of fittest**.

It is inspired by Biological evolution such as

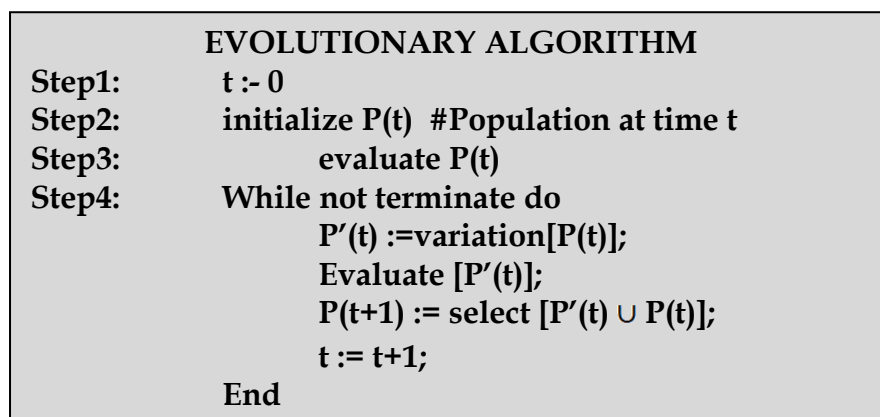
- Reproduction
- Recombination
- Mutation
- Selection

Offspring created by above mentioned biological evolution. Parent population pass genetic traits to offspring. Population adapt to the environment.

Process Flow:



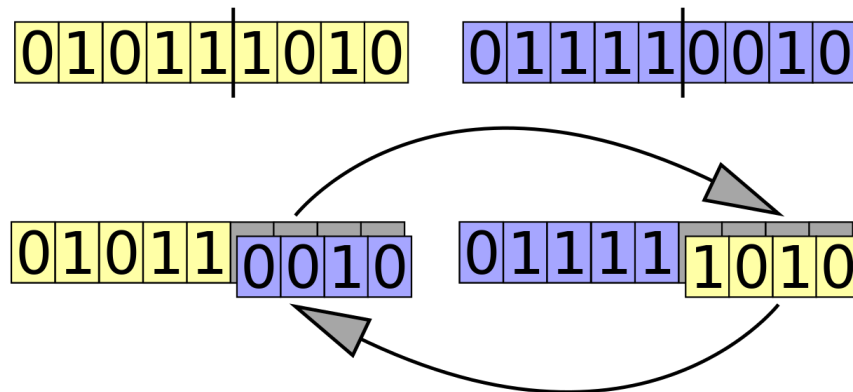
Evolutionary Algorithm= Selection + Crossover + Mutation



Three key evolutionary operators are as follows:

Crossover:

Crossover is recombination of two parent chromosomes by exchanging part of one chromosome with a corresponding part of another so as to produce offsprings.



Mutation: Mutation is to change a part of Chromosome to generate new offspring.



Selection: The survival of the fittest, which means the highest quality chromosomes stay within the population. Preserve Best and eliminate worse.

Fitness Function: Often use as synonym for objective function

Generation: Time unit of the evolutionary Algorithm. An iteration step of an evolutionary algorithm.