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## Genetic Algorithm :-

A genetic algorithm (GA) is a method to solve optimization problems by mimicking natural selection. Here's the process in short

1. Define the problem : Set the function to optimize
2. Initialise Parameters : Set population size, mutation / crossover rates and number of generations.
3. Create Initial Population : Generate random solutions.
4. Evaluate fitness : Measure how good each solution is.
5. Selection : Pick the best solutions for reproduction.
6. Crossover : Combine parts of selected solution to create new ones.
7. Mutation : Apply random changes to maintain diversity.
8. Iteration : Repeat the process for multiple generations.
9. Best Solution : Output the best solution found.

This cycle evolves better solutions over time.

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## Application of GA.

1. Optimization Problems
2. Machine Learning
3. Finance
4. Robotics
5. Game Development
6. Bioinformatics
7. Art and Design
8. Telecommunications.
9. Production scheduling in a Manufacturing Plant.

Algorithm

→ Start
→ Create initial population
→ Calculate fitness score for each individual
→ repeat
  ▷ ~~Solution~~ Selection
  ▷ Crossover
  ▷ Mutation
  ▷ Calculation of fitness score
  until convergence is found
→ Chose the individual with high fitness value
→ Stop.