

# GENETIC ALGORITHMS

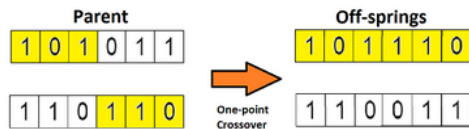
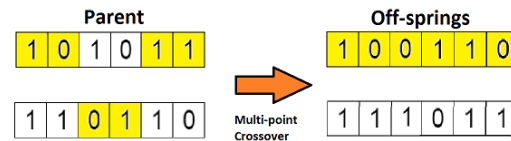
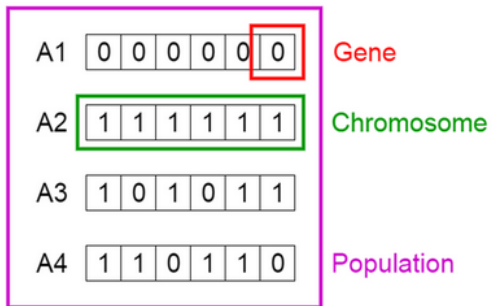
The background of the slide is a deep blue with several large, textured, purple and magenta shapes that resemble chromosomes or DNA strands. These shapes are scattered across the frame, with some in sharp focus and others blurred, creating a sense of depth. The overall aesthetic is scientific and modern.

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# INTRODUCTION

- A **genetic algorithm** is a search heuristic that is inspired by Charles Darwin's theory of natural evolution.
- This algorithm reflects the process of natural selection where the fittest individuals are selected for reproduction in order to produce offspring of the next generation.

# FOUNDATION



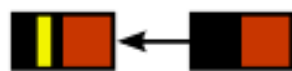
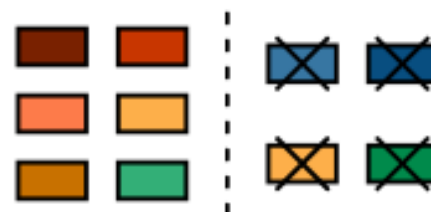
■ Five phases are considered in a genetic algorithm.

1. Initial population
2. Fitness function
3. Selection
4. Crossover
5. Mutation

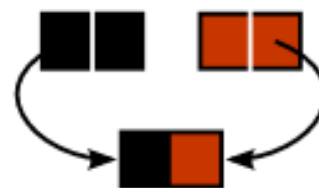
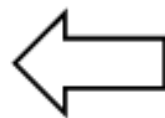
evaluation



selection



mutation



crossover

# STOPPING CONDITIONS FOR THE ALGORITHM

- 1. **Generations**
- 2. **Time limit**
- 3. **Fitness limit**
- 4. **No Improvement**
- ...

# EXAMPLES

- 1. create target string, starting from random string
- 2. n queen