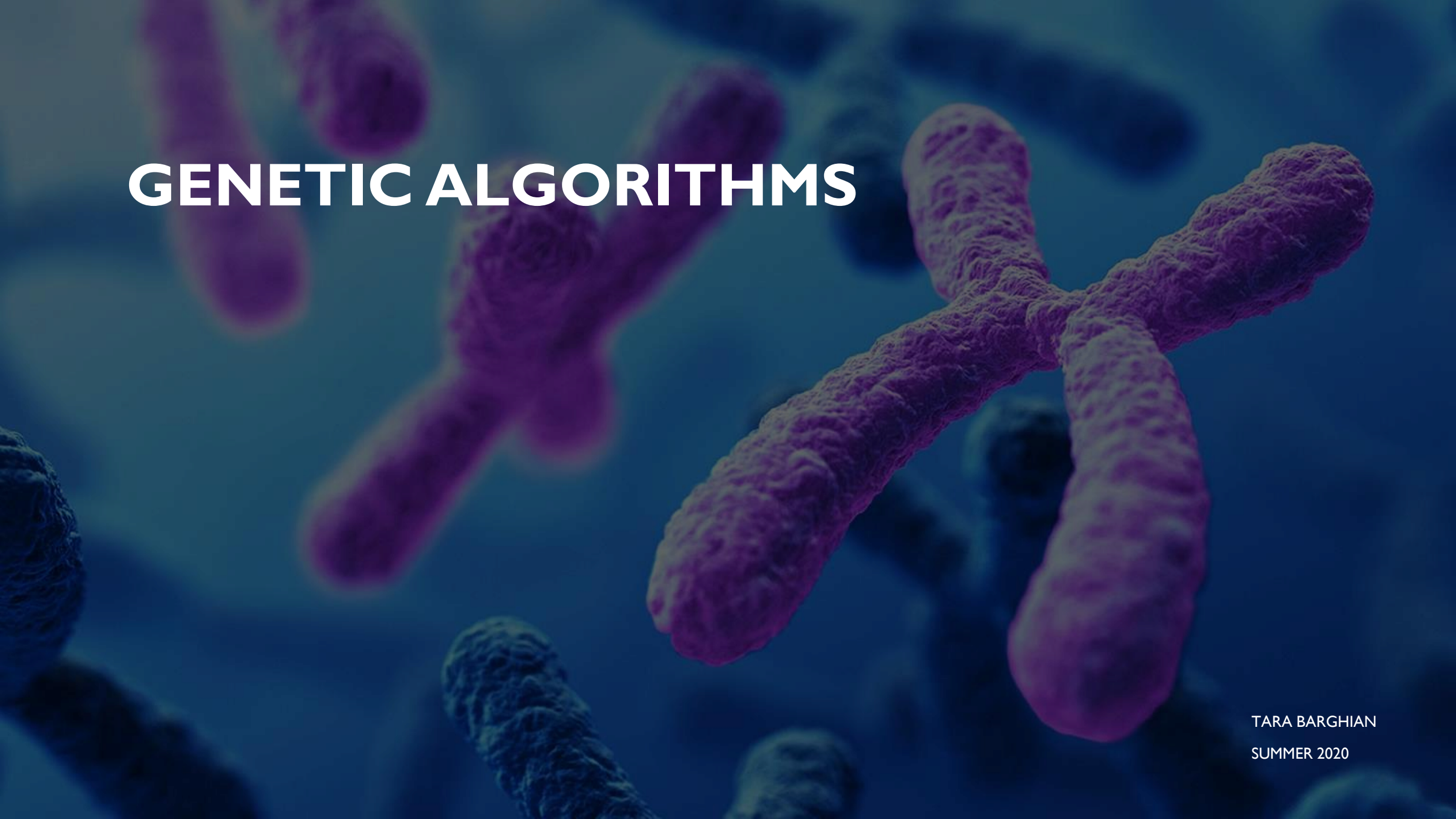

GENETIC ALGORITHMS

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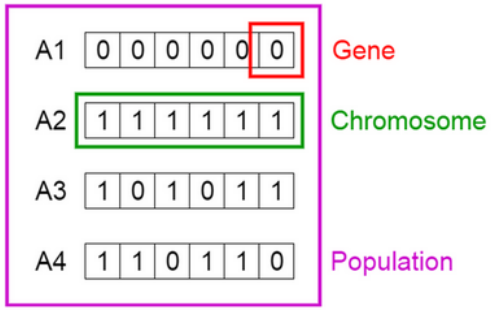
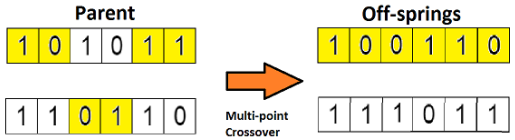
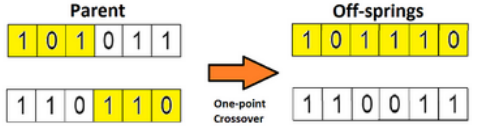
INTRODUCTION

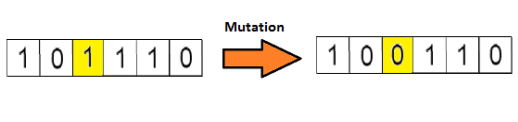
- A **genetic algorithm** is a search heuristic that is inspired by Charles Darwin's theory of natural evolution.
- This algorithm reflects the process of natural selection where the fittest individuals are selected for reproduction in order to produce offspring of the next generation.

FOUNDATION



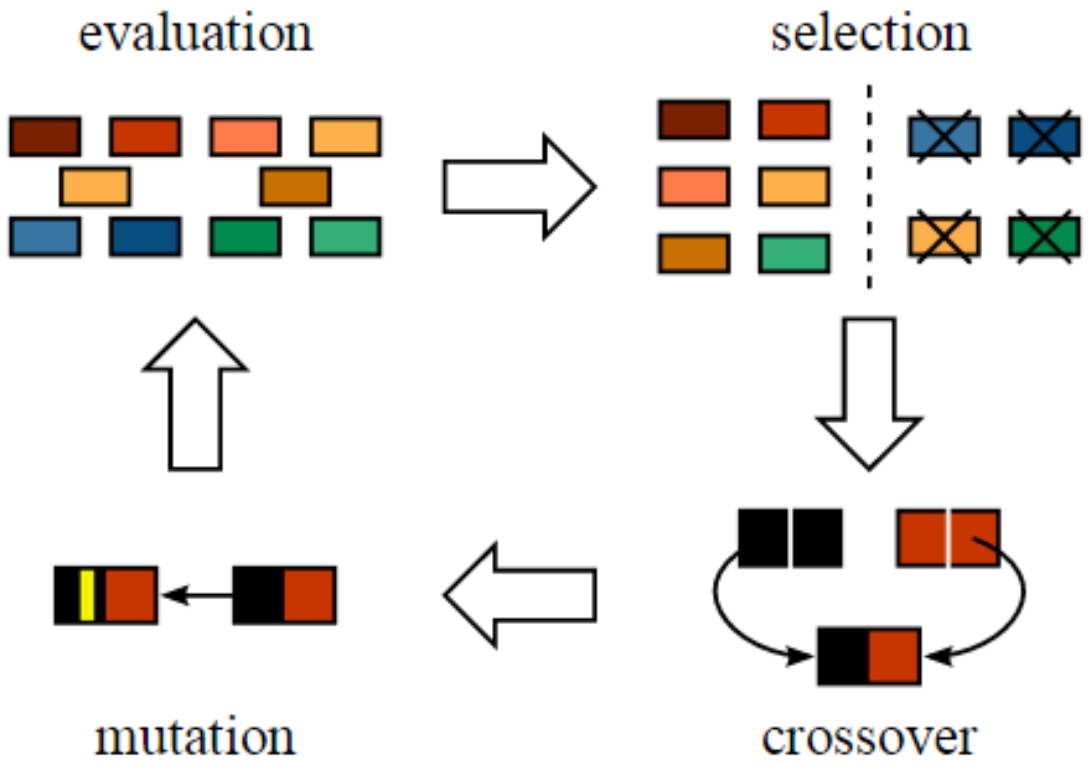






- Five phases are considered in a genetic algorithm.

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