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FACULTY OF EGINEERING AND TECHNOLOGY

LECTURE -22

Umesh Kumar Gera
Assistant Professor
Computer Science & Engineering

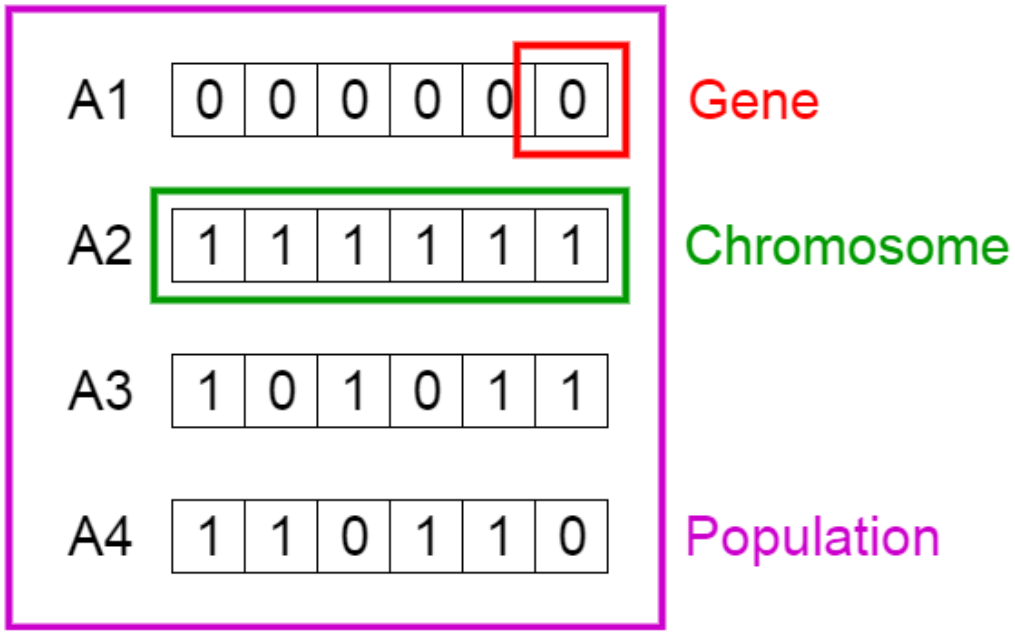
OUTLINE

- Initial Population
- Fitness Function
- Selection
- Crossover
- References

Initial Population

❑The process begins with a set of individuals which is called a Population. Each individual is a solution to the problem you want to solve.

❑An individual is characterized by a set of parameters (variables) known as Genes. Genes are joined into a string to form a Chromosome (solution).



Population, Chromosomes and Genes

Fitness Function

The fitness function determines how fit an individual is (the ability of an individual to compete with other individuals). It gives a fitness score to each individual. The probability that an individual will be selected for reproduction is based on its fitness score.

Selection

- Two pairs of individuals (parents) are selected based on their fitness scores. Individuals with high fitness have more chance to be selected for reproduction.

- The idea of selection phase is to select the fittest individuals and let them pass their genes to the next generation.

Crossover

- Crossover is the most significant phase in a genetic algorithm.

- For each pair of parents to be mated, a crossover point is chosen at random from within the genes.

- For example, consider the crossover point to be 3 as shown below.

REFERENCES

- https://towardsdatascience.com/introduction-to-genetic-algorithms-including-example-code-e396e98d8bf3#:~:text=A%20genetic%20algorithm%20is%20a,offspring%20of%20the%20next%20generation.