Time Table Scheduling

Genetic Algorithm Approach

Contents

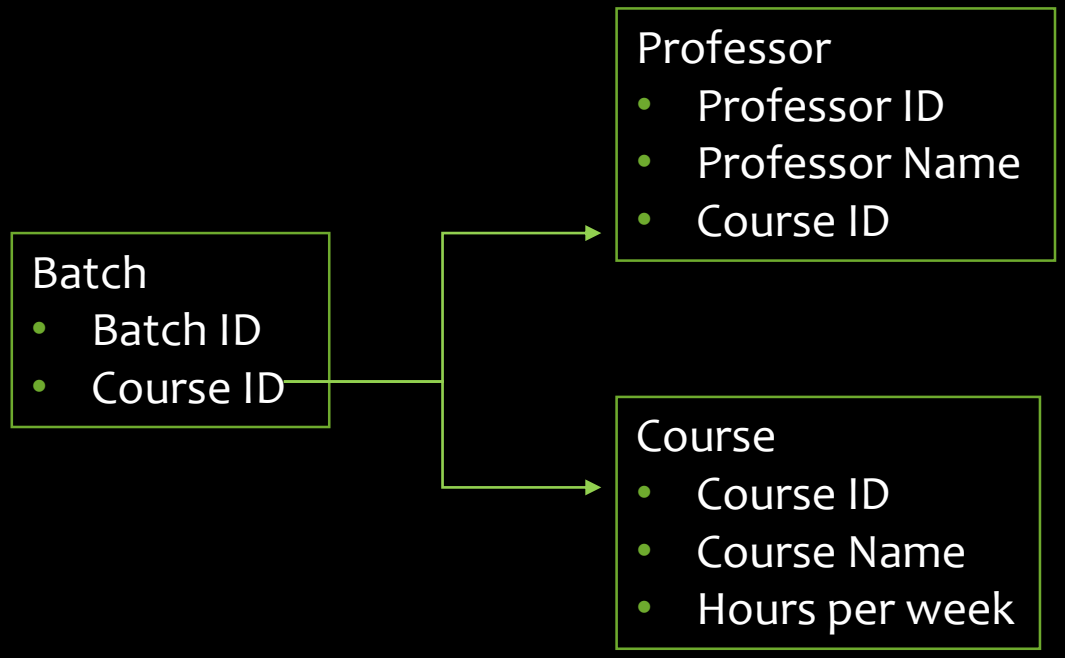
- Insert, Update on University Database using php
- Terms used in Genetic Algorithm
- Evolution in Genetic Algorithm
- Fitness
- Importance of Mutation Probability

Insert, Update on University Database

- Student Registration
- Student Login
- Selection of Courses
- Insert into Database

Student	Course Name	Course ID
16CS01003	DAA	CS01001
16CS01003	DBMS	CS01002
16CS01004	CN	CS01003
16CS01004	ML	CS01004
16CS01004	DBMS	CS01002
16CS01015	CN	CS01003
16CS01015	DAA	CS01001
16CS01015	DEC	EC01001

Schematic Diagram



Room
- Room No

Some useful terms in Genetic Approach

- Gene :
  - Set of Parameters extracted from database
  - Here it is [Batch, Course ID, Prof ID, Day, Time, Room]
- Chromosome :
  - Set of genes
  - Here it is a possible timetable
- Population :
  - Set of Chromosomes
  - Here it is set of timetables sorted by their feasibility

Evolution in Genetic Algorithm

- A gene in Child Chromosome, it either undergoes cross-over or mutation with some given probabilities for evolution of population

CROSS OVER

- Recombination of 2 parent Chromosomes to produce a new Child Chromosome
- Probability at which a parent contributes to child is called Crossover Probability

MUTATION

- If Cross over doesn't happen, the gene selects a random slot
- Probability at which a gene is mutated is called Mutation Probability

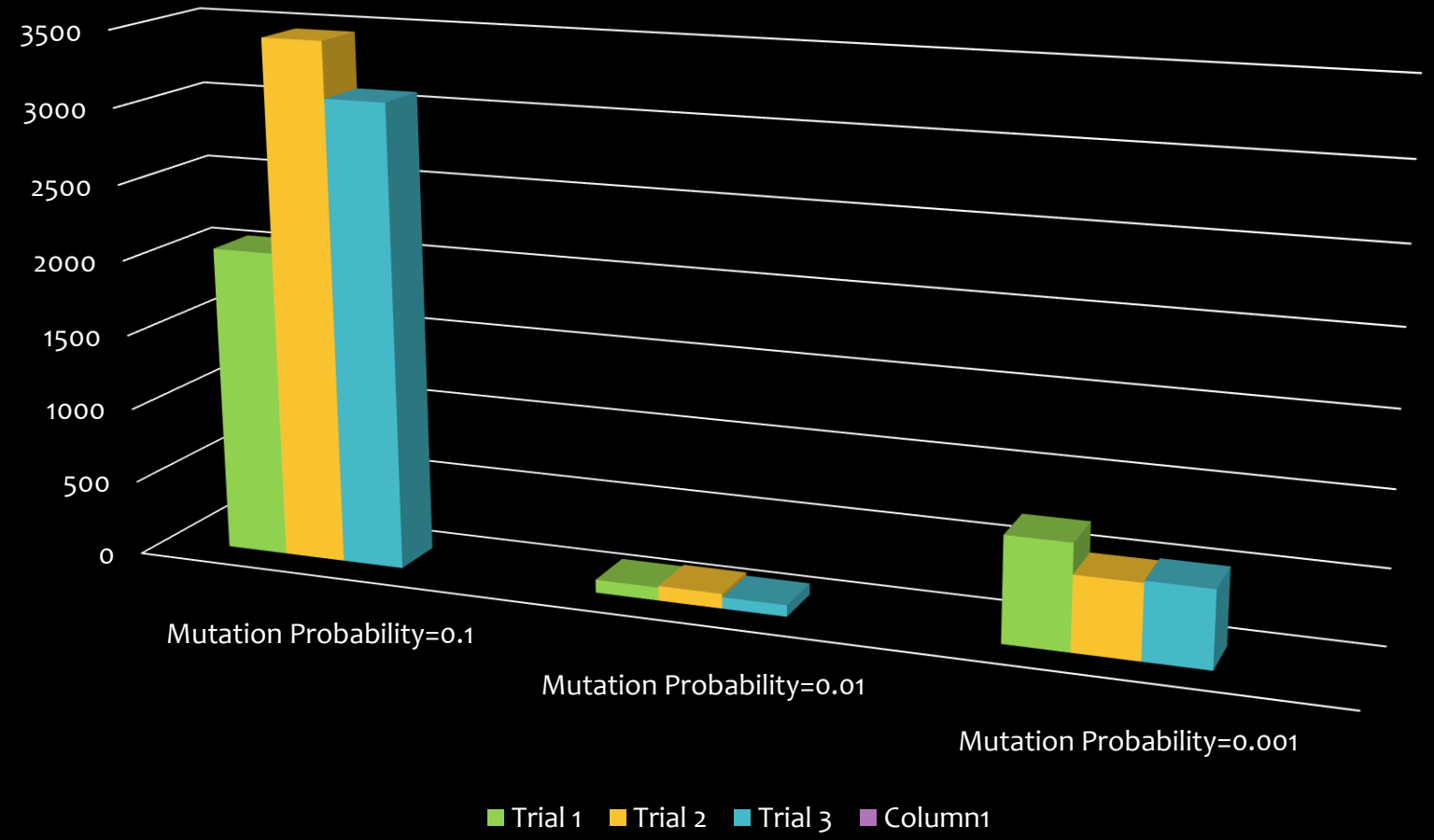
Constraints

- Batch Coincidence :
  - For a slot, there must a unique batch if exists
- Professor Coincidence :
  - For a slot, there must a unique Professor if exists
- Room Coincidence :
  - For a slot, there must a unique room if exists

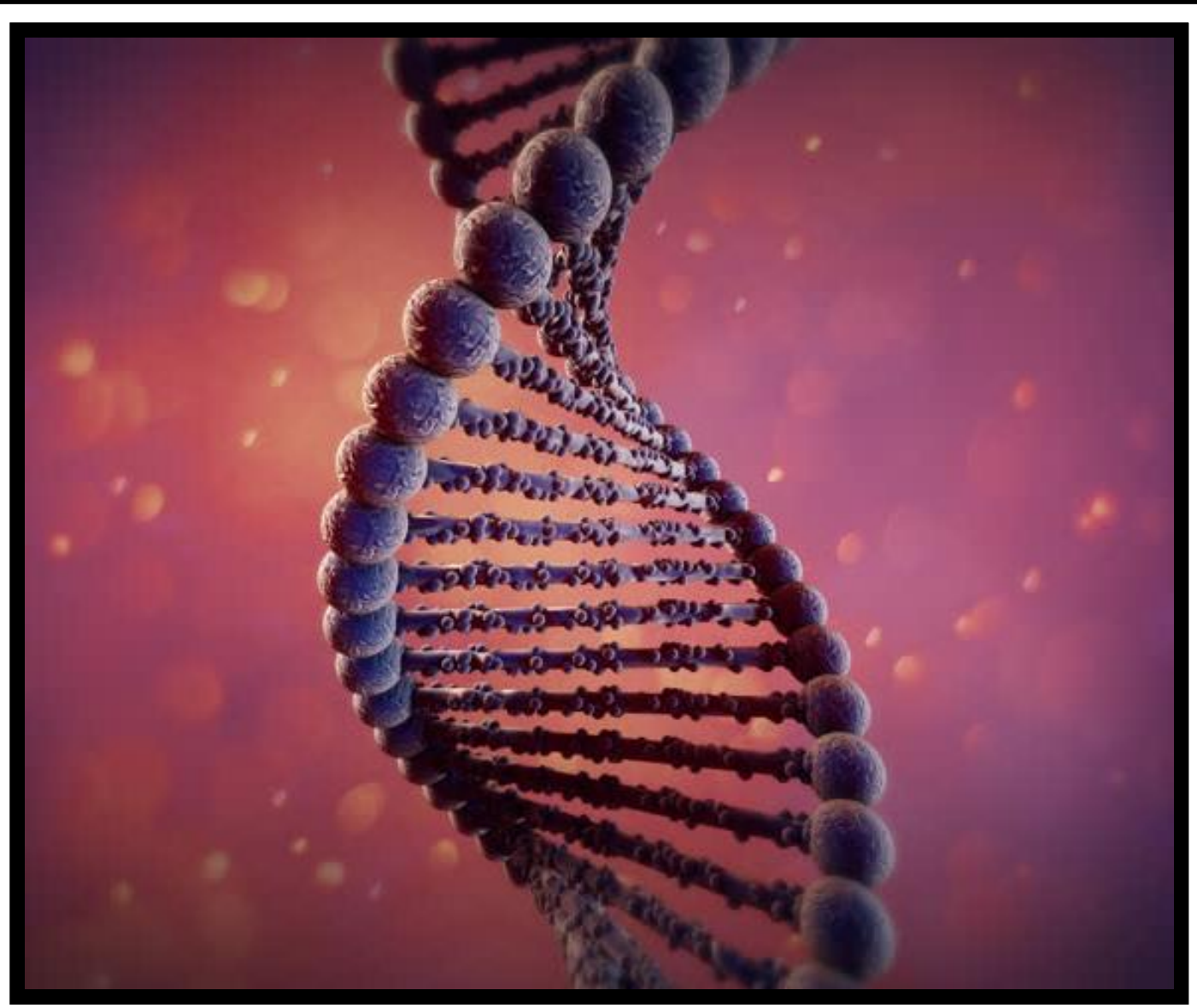
Fitness

- Measure of feasibility of a Timetable
- If the above constraints doesn’t hold, the fitness increases
- Lower the fitness, higher the feasibility

Number of Generations vs Mutation Probability



Mutation Probability is not as good, nor as bad as you think it is !



Thank You

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