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Classroom Schedule Generator

Using Genetic Algorithms

PrOJECT Report

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# Classroom Schedule Generator

## PROBLEM Statement:

In real world, a potential scenario where Genetic Algorithm can be implemented is generation of efficient time schedules. Efficient schedule generator finds its application in various problem for example, Classroom scheduling, Flight landing schedule problem, Job scheduling and many more.

We have considered a problem where we need to come up with a semester timetable for classes in an University for a particular Department. Our task is to generate an optimum schedule where there is least possible or no conflicts between classes. We have defined conflicts as follows:

CONFLICTS:

>A professor is teaching more than one class at the same time.

>A room is hosting more than one class at the same time.

>A room conducting a class which has more number of student than the capacity of the class.

### IMPlementation Design:

### Genetic code:

*Gene expression:*

Chromosome is a potential solution or a candidate solution. We a population of chromosomes and we are sorting these chromosomes on the basis of their fitness level.

>performing mutation on all population other that Elite population.

*Fitness function:*

Schedules are sorted by fitness function.

Fitness level in our problem is based on the minimum possible number of conflicts.

Our fitness function is inversely proportional to the number of conflicts encountered.

*Mutation:*

*Crossing Over:* Considering a fixed number of Elite population that will reappear in next generation.

And performing crossover for rest of the population.

*Evolution:*

By performing Crossover Culling and Mutation, we are performing Evolution from one generation to other generation.

After crossover the population of new generation will be sorted by a fitness function. Hence providing fair chance for getting new candidates(schedules) in the elite population in order to achieve a better solution.

*Elitism:*

## Results:

## Conlcusions: