

Survey Paper On Automated Timetable Generator Using Genetic Algorithm

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Abstract- It is Software for Teacher and Student for the Computer Department, which automates labs, classrooms timetable for the students and Teachers. In this paper Existing System present novel approach of solving college timetable, scheduling using complex algorithm to design effective model for scheduling with challenging constraint consideration. Automated Timetable Generation is an essential component of scheduling in all sector of Education. College timetable includes the scheduling of time and venue for lecture. The Automated Timetable generating system using Genetic Algorithm provide an administrative module that facilitates scheduling and rescheduling. In addition the timetable customization system permits the user to view, customize and provide rescheduled timetable updates.

Keywords- Automation, Genetic Algorithm, Evaluation, Search Methodology, Scheduling Algorithm.

I. INTRODUCTION

Even though most college administrative work has been computerized, the lecture timetable scheduling is still mostly done manually due to its inherent difficulties. The manual lecture timetable scheduling demands considerable time and efforts. The lecture timetable scheduling is a constraint satisfaction problem in which we find a solution that satisfies the given set of constraints. A college timetable is temporal arrangement of a set of lectures and classrooms in which all given constraints are satisfied. Creating such a timetable manually is complex and time consuming process. By automating this process with computer assisted timetable generator can save a lot of precious time of administrator who are involve in creating and managing course timetables.

Timetable is the task of creating timetable while satisfying some constraints. There are two types of constraints, Soft constraints and Hard Constraints. Soft constraints are those if we violate them in scheduling, the output is still valid, but Hard constraints are those which if we violate them the timetable is no longer valid.

As the system has been proposed for the college timetable. Teacher of the college face many difficulties as they

have to scheduling for each and every classroom and labs also keep updating about the changes of lectures. Sometimes there is no notification given. Due to these the students and Teachers miss out some important lectures and labs. The system also gives flexibility to the admin to update and to view the student and teachers timetable. The system ensures correct information as well as the data uploaded on the software to be notified to each and every student as well as Teachers. This project has major goal that is fulfilling the requirements of the admin, students and teachers for checking daily timetable.

II. LITERATURE SURVEY

[1] Finding a feasible lecture/tutorial timetable in a large university department is a challenging problem faced continually in educational establishment. This paper presents and Evolutionary Algorithm (EA) based approach to solving a heavily constrained university timetabling problem. The approach uses a problem-specific chromosome representation. Heuristics and context based reasoning have been used for obtaining feasible and reliable timetable in reasonable computing time. An intelligent adaptive mutation scheme has been employed for speeding up the convergence. The comprehensive course timetabling system presented in this paper has been validated, tested and discussed using real world data from large University.

Genetic Algorithm (GAs) are adaptive heuristic search algorithms that belongs to the larger part of evolutionary algorithms. Genetic Algorithm are based on the idea of natural selection and genetics. They are commonly used to generate high quality solutions for optimization problems and search problems. Genetic Algorithm simulate "survival of the fittest" among individual of consecutive generation for solving a problem. Each generation consist of a population of individual and each individual represents a point in search space and possible solution. Each individual is represented as a string of character/integer float and bits. This string is analogous to the chromosome.

Once the initial generation is created, the algorithm evolve the generation using following operators-

1. Selection Operator: The idea is to give preference to the individuals with good fitness scores and allow them to pass their genes to the successive generation.

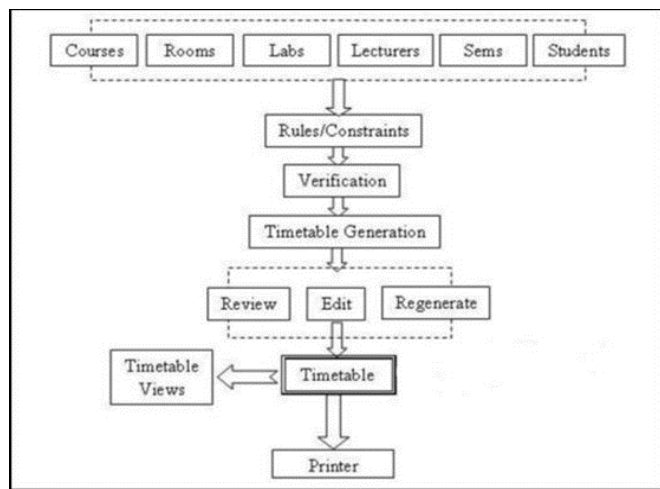
2. Crossover Operator: This represents mating between individuals. Two individuals are selected using the selection operator and crossover sites are chosen randomly. Then the genes at these crossover sites are exchanged, thus creating a completely new individual (offspring).

3. Mutation Operator: The key idea is to insert random genes in offspring to maintain the diversity in population to avoid premature convergence.

4. Fitness: Fitness score is the number of characters which differ from the character in the target string at a particular index. So an individual having a lower fitness value is given more preference.

III. PROPOSED SYSTEM

In the existing system, everything is carried out manually and all data is maintained in an Excel sheet. Maintaining and managing data is a difficult task. Admins need to refer all the schedules of teachers, timing, and maintain all the details for further working and keep the document updated. This is time-consuming. To overcome these drawbacks of the existing system, the proposed system will be developed. The proposed system will provide easy retrieval and updating of data for students and teachers and easy uploading and updating of timetables for teachers as well as students. Once you open this software, you will get the options like login, further categorized as sign in and sign up, classroom details, Lab details, Teachers' details, and forum, which is the user interface provided for teachers and students.



Administrative user interface is also provided in this software having an option as admin login. There are three types of users: they are students, administrator, and teachers. The

administrator has all the priorities and authorities regarding updating and approvals. The administration can view and approve the timetable. Students can only sign in, view the timetable, and only view details regarding year, class, and lab timetable. Teachers have the authority to check their timetable as class-wise and lab-wise, but they also have the authority to check other teachers' timetables. When teachers' lecture time has come, this software sends notification regarding class and lab to be conducted by SMS or E-mail notification.

IV. METHODOLOGY

1. Logging In:

Login for admin: The admin will access through database accessing at the local machine through a login form which is through desktop application.

Login for Students: The students may login through their login ID and password after opening the application on the Vschedule software. The login IDs and default passwords will be generated by the admin and communicated to each student who may then change only the password.

Login for Faculty: The Faculty will login through their login ID and password.

2. Authentication:

All the logins would be authenticated at the server side of the owner.

All the student & faculty login will be authenticated on the data server.

3. Creating data base:

The database will reside at the owner's server machine (Data of all the admins) as well as data server on a local machine of the admin cell (Only data of its own admin subscribers).

The database will also reside in MY SQL. (Only the data of the previous logins on that device and their test information, score cards, report cards) JDBC connectivity will connect the data servers and the JavaFX.

4. Generating IDs and passwords:

The Owner will generate IDs and passwords to grant it to subscribed institutions.

The admin will generate ids and passwords to distribute it to students who may later change their passwords only.

5. Teachers Upload their subjects :

All the teachers are upload their respective subject in semester wise.

6. Check availability of classrooms and Labs:

Admin check the availability of classrooms and labs. And trying to resolve clashes of classrooms and labs.

7. Generate Random Timetables:

The first step is after checking availability of classrooms and labs Admin will generate random timetables.

8. Timetable generate using Genetic Algorithm:

After generating random timetables, admin put random timetables in genetic algorithm for further process. After process get completed the final timetable is tested the fitness value and final timetable is generated and admin send it to the all Teachers and Students.

VI. CONCLUSION

The study has presented an approach of Automating timetable generation by applying a new technique like Genetic Algorithm. The developed system can guarantee the problems faced by the existing system will be solved. The system will ensure flexibility to use as the system gui will be user friendly. Also the system has extra features like notification with the SMS which will help the teachers to get the information about the lectures and classroom details also lab details. The students will get notified through email and messages. The system also reduces the work load of the admin as now it will be done online which was done manually before. The project reduces time consuming and the pain in the framing the timetable manually. The benefits of this approach are simplified and reduced the development time. In short the developed system is reliable, helpful and a well-functional system.

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