



## Academia Timetable Management System: A Review

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### Abstract

Manual system of timetable scheduling consumes time and may contain errors or numerous misreadings may do or clashes of subject or allocation of the same class or reiteration of the course may do. Due to the Academia Management System the schedule will be generated automatically just by inputs like details of faculty, subjects, and classroom number. The system will also shoot the textbook communication to the distributed separate faculty has a memorial for the lecture. Response will be needed for the textbook communication and consequently the changes will be made. The attendance will be also been shown statistically or through graph which will be manually done by the faculty of a particular class. Parents can take a view of their pupil's attendance graph on the yearly base. The Academia Management system shows the available classrooms and the faculty which is available if the distributed faculty isn't present the available faculty can take over the lecture.

### Introduction

Technology now is referred in every field which makes the work lightly and done in lower time. Features like ease of work, ease of literacy, lesser delicacy of work with the least time needed, Cost effective, ease of conservation and numerous further. Technology must be used in the lower sectors too. Technology ultimately means "computers" and the software and tackle factors which makes the work lightly and more comfortable to do. Especially the software is more applicable, used for making the work lightly and lightly to use too. Software is veritably use full for every sector and especially in academy fields which will make the effects easy to do.

Time table and attendance record are an important part in any academy or council operation system. To run the whole education system in an academy or in a council time table and attendance graph is a veritably crucial aspect to manage and control the whole system. Back in the days when the technology was not applied or was not too applicable in educational field. schedule and attendance were made manually by the academic institutions which a tedious task for the institutions to do so. Keeping record of the faculty and arranging their course and deciding the allocation of each faculty is little excited to do. Now we've technology to the same thing with lower time needed without

important sweats. Automatic schedule creator and attendance record systems can be really use full in the education system. Every field which makes the work lightly and done in lower time. Technology now is referred in every field which makes the work lightly and done in lower time. Features like ease of work, ease of literacy, lesser delicacy of work with the least time needed, Cost effective, ease of conservation and numerous further. Technology must be used in the lower sectors too. Technology ultimately means “computers” and the software and tackle factors which makes the work lightly and more comfortable to do. Especially the software is more applicable, used for making the work lightly and lightly to use too. Software is veritably use full for every sector and especially in academy fields which will make the effects easy to do.

## Objective

1. Academia management system is designed to save the time and reduce the complexity while creating a time table manually. The system will create a timetable automatically just by entering the required details of the faculty.
2. Many of the times the faculty is not available so the system will automatically allot the available faculty according the time table.
3. The system will display a statistical data of the attendance of student on the monthly basis.

## Literature survey

1. **[1] Automated timetable generation using multiple context reasoning for university models.**

Author: Dipti Srinivasan, Tian Hou Seow, Jian Xin Xu

Published in IEEE - 2019

“Dipti Srinivasan, Tian Hou Seow and Jian Xin Xu” proposed that finding a feasible lecture/tutorial timetable in a large university department is a challenging problem faced continually in educational establishments. This paper presents an evolutionary algorithm (EA) based approach to solve 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 timetables in a reasonable computing time. An intelligent adaptive mutation scheme has been employed for speeding up the convergence. But this system is difficult to implement since it considers entire university problem and evolutionary algorithm.

2. **[2] University Time Table Scheduling using Genetic Artificial Immune Network.**

Author: Antariksha Bhaduri

Published in IEEE - 2020

Antariksha Bhaduri, in their article proposed that Scheduling is one of the important tasks encountered in real life situations. Various scheduling problems are present, like personnel scheduling, production scheduling, education time table scheduling etc. Educational time table scheduling is a difficult task because of the many constraints that are needed to be satisfied in order to get a feasible solution. Education time table scheduling problem is known to be NP Hard. Hence, evolutionary techniques have been used to solve the time table scheduling problem. Methodologies like Genetic Algorithms (GAs), Evolutionary Algorithms (EAs) etc. have been used with mixed success. In this paper, we have reviewed the problem of educational time table scheduling and solving it with Genetic Algorithm. We have further solved the problem with a mimetic hybrid algorithm, Genetic Artificial Immune Network (GAIN) and compare the result with that obtained from GA. Results show that GAIN is able to reach the optimal feasible solution faster than that of GA.

### 3. [3] A mimetic algorithm for university course timetabling problem.

Author: Sadaf N. Jat, Shengxiang Yang

Published in IEEE - 2019

“Shengxiang Yang, Member, IEEE, and Sadaf Naseem Jat” proposed that the university course timetabling problem (UCTP) is a combinatorial optimization problem, in which a set of events has to be scheduled into time slots and located into suitable rooms. The design of course timetables for academic institutions is a very difficult task because it is an NP-hard problem. This paper investigates genetic algorithms (GAs) with a guided search strategy and local search (LS) techniques for the UCTP. The guided search strategy which is used here is to create offspring into the population based on a data structure that stores information extracted from good individuals of previous generations. The LS techniques use their exploitive search ability to improve the search efficiency of the proposed GAs and the quality of individuals. The proposed GAs is tested on two sets of benchmark problems in comparison with a set of state-of-the-art methods from the literature. The experimental results show that the proposed GAs is able to produce promising results for the UCTP

### 4. [4] Attendance Marking System

Author: Mohammad Ausaf Anwar, Durgaprasad Gangodkar

Published in IEEE - 2018

“Design and Implementation of Mobile Phones based Attendance Marking System”, Department of Computer Science Engineering, Graphic Era University, Dehradun, Uttarakhand, India, 2015. In this paper, the architecture and design specifications of Student Attendance Marker Application on an Android platform are presented. At the very first, Users/Lecturers on their device will fetch the list of students of the class for which attendance is to be recorded. They have used SQLite as a local database to store the data.

## Problem statement

Academia Management System is a automated schedule creator and shows the attendance graph of the scholars. The software can be use in the seminaries and sodalities make the schedule system easy by making it through the software. Academia Management System will be salutary in sense of ease of work, ease of literacy, lesser delicacy of work with the least time needed, Cost effective, ease of conservation and numerous further.

## EXISTING SYSTEM

In the existing system, each task is carried out manually and processing is a very tedious job. The Organization is not able to achieve its need in time and the results too may not be accurate. Due to all the manual maintenance, there are number of difficulties and drawbacks that exist in this system.

### Disadvantages of the existing System:

- Done manually
- Increases paper work
- High chances of errors
- Time taking process

## Proposed System

The Automatic timetable creator is designed to replace the homemade system of creating the schedule and will reduce the time which was demanded to make a schedule. This new system will make a schedule automatically just by entering the required information of the faculty. This system will reduce the sweats needed from the institute operation platoon. This system will also notify the faculty to whom the lecture is distributed before the lecture. The system will automatically shoot the announcement to the faculty which will remind that the faculty's lecture will be in reputed classroom. This system will also maintain an attendance of the pupil which will entered manually by the faculty in the operation. The attendance data will be shown graphically on the daily and yearly base.

## IMPLEMENTATION

### A. Insertion module:

In this module we provide various user inputs to our system which acts raw data for creating the final time table.

1. Faculty details: In this sub module various details of faculty are inserted such as faculty name, email and contact number. And we also provide a unique faculty id which helps in referencing throughout our software and it also acts a login credentials.

2. Student details: In this sub module various details of student are inserted such as student name, email and contact number. And we also provide a unique student id which helps in referencing throughout our software and it also acts a login credentials.

3. Subject details: In this sub module details of subjects are inserted that are in our curriculum such as subject name and subject code. We try to store the theory subjects and lab subjects separately. The type of subject (compulsory or elective) is also specified for each subject in our database so that it becomes easy for us in future use.

4. Add No. of periods: To generate timetable for a particular semester and section first the timeslots need to be specified for each week day. Here you need to again specify whether that period is allocated for lab or for theory.

5. Mapping: In this sub module we take user input such as what are all the subjects that are present in each semester for each section and which faculty is taking which theory subjects and which lab in a particular semester and we store it our database.

### B. Allocation module:

In this module, user can choose any semester randomly to start the process. It starts filling the slots from the Monday by selecting a particular subject, faculty that is mapped with that subject gets allotted to that slot of the day. The various constraints are checked every time the slot is filled. It will not be blocked if any of the constraints is not satisfying.

The given set of constraints need to be satisfied:

- A classroom is not assigned to more than one teacher at the same time.
- A teacher cannot teach more than one class at the same time.
- A teacher cannot teach more than three subjects in a day for a single class.
- During the lab hours particular lecturers should not be allotted with the theory class.
- A faculty is assigned maximum of 4 lectures in a day OR maximum of 1 practical session and of 2 theoretical sessions in a day.

Display Module:

In this module we can view how the time table is generated of each class. We have also provided the feature to view the class time table.

1. View timetable: In this we can view the class wise generated time table by selecting the semester and section which we want to see. The time table will have subject with faculty who handling that subject.
2. View Faculty: All the faculty details can be viewed.
3. View students: All the student details can be viewed

### C. Notification:

In this module, the respected faculty will get a notification for the upcoming lecture which will notify that the faculty has a lecture in the following class which was allotted by the academia system.

Notification will have two sub-options will addresses the availability of the faculty

1. Accept: - Lecturer must choose this option and after doing this the class will be finally allotted to the faculty.
2. Deny: - If lecturer chooses this option, then the system will send a notification to the other available faculties who have a free lecture according to the timetable

## System architecture

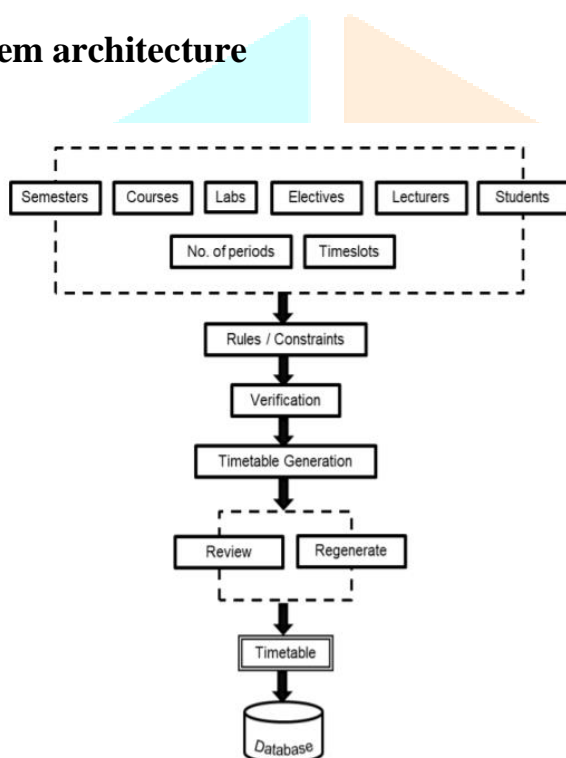


Fig 1: System Architecture

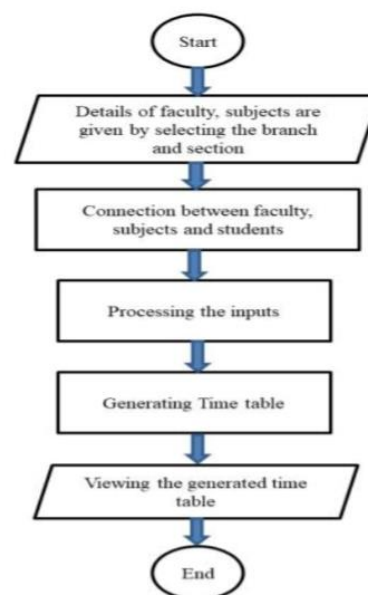


Fig 2: Flow Chart diagram

## Advantage of Proposed System:

- Easier slot assigning.
- Less time consumption.
- NO slot clashes.
- Always considers the other department slots first.
- Various possible slot combinations can be acquired.
- User friendly.

## Future Scope

1. The system detects the live location of the faculty from the entire campus
2. The attendance can be taken automatically through authentication of the student
3. Will have the whole profile information of the faculty

4. The system being use for the students too. There will be a student login with additional facilities for students
5. The system will being helpful for the whole institute management with keeping the entire record of the institute.

## CONCLUSION

The Academia system management's basic function is to generate the time table according to the data filled. This application will simplify the process of time table generation smoothly which may otherwise need to done using spread sheet manually possibly leading to constraints problem that are difficult to determine when time table is generated manually. The project is developed in such a way that, no slot clashes occur providing features to tailor the timetable as of wish. Separate timetable for the individual class is generated automatically by this system. Various slot combinations can be acquired so that another timetable is generated as of need. The project reduces time consumption and the pain in framing the timetable manually. The future enhancement that can be developed from the project may include Leave Management, Exam Schedule Generation, Exam Room Scheduling and Time Constrain Problems. This enhancement can be achieved my making further modifications keeping the approach and techniques used for this project.

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