College Timetable using Time Scheduling Algorithm

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Abstract— **Creating the timetable for educational institution is still the challenging task. This system proposes automated timetable generation technique where the data of the college details are analyzed. It also categorize the department wise time scheduling using data category algorithm. This object comprises of Classroom objects and the timetable for them likewise a fitness score for the timetable. The timetable needed to schedule the faculty at provided time slots in such a way that their timings do not overlap and the timetable schedule makes the best use of all faculty subject demands. All the timetable schedules will be shown by the staff, principal, and HOD at the college, if the staff will leave alternative staff will allocated by the admin. Timetable management system is a unanimous requirement for planning class timings in college. The system can be deployed to schedule a new class, cancel an existing class, and making other changes to a timetable. It is simple and saves time and energy. A cleverly made timetable makes the students' and teachers' jobs much easier and stress-free. It also helps students to stay focused on one particular subject at a particular time. Therefore, a timetable is the most important thing for the students as well as teachers. And so, it needs to be crafted with care.**

Keywords— *Ga, Ann, Sql, Gui, Html*

I. INTRODUCTION

A Biological Neural Network refers to the information processing elements of the nervous system, organized as a collection of neural cells, called neurons that are interconnected in networks and interact with each other using electrochemical signals. A biological neuron is generally comprised of dendrites which provide the input signals to the cell. The neuron reacts to input signals and may produce an output signal on its output connection called the axon which is connected to the dendrites of other neurons via synapses. The study of biological neural networks falls within the domain of neuroscience which is a branch of biology concerned with the nervous system. Neuroanatomical is a subject that is concerned with the structure and function of groups of neural networks both with regard to parts of the brain and the structures that lead from and to the brain from the rest of the body. Neuropsychology is another discipline concerned with the structure and function of the brain as they relate to abstract psychological behaviors. For further information, refer to a good textbook on any of these general topics. The field of

Artificial Neural Network is concerned with the investigation of computational models inspired by theories and observation of the structure and function of biological networks of neural cells in the brain. They are generally designed as models for addressing mathematical, computational, and engineering problems. As such, there is a lot of interdisciplinary research in mathematics, neurobiology and computer science. An Artificial Neural Network is generally comprised of a collection of artificial neurons that are interconnected in order to performs some computation on input patterns and create output patterns. They are adaptive systems capable of modifying their internal structure, typically the weights between nodes in the network, allowing them to be used for a variety of function approximation problems such as classification, regression, feature extraction and content addressable memory. Given that the focus of the field is on performing computation with networks of discrete computing units, the field is traditionally called a 'connectionist' paradigm of Artificial Intelligence and 'Neural Computation'. Artificial Neural Networks are typically difficult to configure and slow to train, but once prepared are very fast in application. They are generally used for function approximation-based problem domains and prized for their capabilities of generalization and tolerance to noise. They are known to have the limitation of being opaque, meaning there is little explanation to the subject matter expert as to why decisions were made, only how. Neural networks take a different approach to problem solving than that of conventional computers. Conventional computers use an algorithmic approach i.e. the computer follows a set of instructions in order to solve a problem. Unless the specific steps that the computer needs to follow are known the computer cannot solve the problem. That restricts the problem-solving capability of conventional computers to problems that we already understand and know how to solve. But computers would be so much more useful if they could do things that we don't exactly know how to do. Neural networks process information in a similar way to the human brain does. The network is composed of a large number of highly interconnected processing elements (neurons) working in parallel to solve a specific problem. Neural networks learn by example. They cannot be programmed to perform a

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specific task. The examples must be selected carefully otherwise useful time is wasted or even worse the network might be functioning incorrectly. The disadvantage is that because the network finds out how to solve the problem by itself, its operation can be unpredictable. On the other hand, conventional computers use a cognitive approach to problem solving; the way the problem is to solved must be known and stated in small unambiguous instructions. These instructions are then converted to a high-level language program and then into machine code that the computer can understand. These machines are totally predictable; if anything goes wrong is due to a software or hardware fault.

II. EASE OF USE

Literature Review

A. *Electronic Lecture Time-Table Scheduler Using Genetic Algorithm*

Lecture time-tabling preparation has always been known as a typical scheduling problem that is time consuming, energy sapping and often leading to general apathy and waste of resources. Planning time-table every session or semester is among the most complex and error-prone task carried out in higher institutions of learning. Therefore, the need to adopt an electronic system as opposed to the manual process cannot be over-emphasized. Several other administrative sectors of most institutions have been automated, but lecture time-tabling is still done manually because of its inherent problems. Planning lecture time-table demands enormous attention and effort from any institution because of its constraint satisfaction problem. The Federal Polytechnic Ilaro, the case study in this research operates a Manual time tabling system (MTTS) that is done centrally, which makes it more difficult in getting a flawless lecture scheduling. This study developed an electronic lecture time-table scheduler (ELTS) using Genetic algorithm to provide convenience in fixing classes and reduction in the risk of omission and clashes of courses, halls and lecturers. Questionnaire was also prepared and administered to sample the opinions of staff, students and committee members involved in the manual process. Difference in mean response on the two response variables of ELTS and MTTS was tested using Paired Sample T-test technique. The result from the analysis corroborates the fact that the new ELTS will be the best method in tackling the lapses experienced by the old system.

B. *Auto-Generate Scheduling System Based On Expert System*

A technique for smart auto generate scheduling system specifically for the educational sector. In constructing a precise and high efficient timetable there are constraints that needs to be conceded i.e. availability of class rooms, students, lecturers, courses, time slots etc. These are the tedious elements that contribute to the challenges in producing the same. Considering Faculty of Electrical Engineering (FKE) University Technology MARA (UiTM), Pasir Gudang campus as a piloted project, the proposed Auto-Generated Scheduling System (AGSS) is

expected to overwhelm these problems. AGSS will provide the accessibility to the timetable committee to arrange the detail by simply loaded the information i.e. numbers of lecturer, list of class room, courses and loading detail (ATS) into the developed algorithm Artificial Intelligence (AI) expert system. Xampp and Visual basic is used in developing the timetable database and Graphical User Interface (GUI) for timetable system respectively. Based on the loaded information, the system will generate the class timetable automatically with individual user customizable setting. AGSS is adept to envisage the cost effective with fast and precise solution on the timetable management thus providing alternative solutions for timetable management while maintaining quality, reliability, and functionality. Faculty at IT the University of Moratuwa. Apache web server, MySQL Database Management System, PHP and Yii with MVC architecture were compatible with each other. METHODOLOGY This section describes the approach, design and implementation of the TMSFIT as a framework.

C. *Utilization Of Timetable Management System To A Medium Scaled University*

University timetable construction is hardworking and complicated task when there are large number of course arrays and limited resources. As a result, universities and some institutes tend to solve this issue manually even; the results may not always fully optimal. In this paper, we discuss about a framework of utilizing timetable management system to a medium scale university for resource optimization. Our endeavor through the overall research was to develop an automated timetable management system to the faculty of IT at university of Moratuwa to overcome the mentioned scheduling issues. We conducted a preliminary study and hypothesized it can be achieved by using Genetic Algorithm. In the solution, each individual called chromosome and it was evaluated using a fitness function in the implementation process. Five great Chromosomes with higher fitness value considered as optimal solution or timetable schedules. The timetable administrator can further refine the most suitable timetable. Tools such as PHP, Yii with MVC architecture and Mysql were used in this system. Finally, this system was tested and evaluated in the university background and we suggest this framework is more desirable for medium scale universities. Another problem occurs due to variation of constraints from one institution to another. Technology obtained Before the literature survey we had two options of directing this research path as whether use a rule based system or use any algorithm such as GA. Finally, concerning the Literature review, Genetic Algorithm and some other free software were selected to implement the timetabling problem. Iris segmentation performs an vital function with inside the iris reputation system, and accurate segmentation of iris can lay a terrific basis for the follow-up 7 paintings of iris reputation and can substantially enhance the performance of iris reputation. We proposed 4 new viable community schemes and the first-class community version Fully Dilated Convolution combining U-Net (FD-UNet) is acquired via way of means of training

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and trying out at the equal datasets. FD UNet makes use of dilated convolution rather than unique convolution to extract extra international features, in order that the info of photos may be processed better. The proposed technique is examined with inside the near-infrared illumination iris datasets (CASIA-iris-interval-v4.0, ND-IRIS-0405) and the seen mild illumination iris dataset (UBIRIS.v2). The f1 ratings of our version at the CASIA-iris-interval-v4.0, ND-IRIS-0405 and UBIRIS.v2 datasets reached 97.36%, 96.74%, and 94.81%, respectively. The experimental outcomes display that our community version improves the accuracy and decreases the mistake rate, and plays properly on each near-infrared illumination and seen mild illumination iris datasets with suitable robustness.

D. Time Table Management

The problem of constructing an automated system for use with timetabling is a particularly well known one. Many programs exist for this task but perform well only in particular isolated environments. We are currently developing a general system able to cope with the ever changing requirements of large educational institutions. In this paper, we present the methods and techniques behind such a system. We present graph colorings and room allocation algorithms and show how the two can be combined together to provide the basis of a flexible and widely applicable timetabling system. We also discuss, in some detail, how several common timetabling features can be handled within the system. We intend to overcome the problems of intractability by producing a spreadsheet type system that the user can guide in an informed and useful way. This gives the user control of the search and the possibility of backtracking where no reasonable solution is found, while still letting the heuristic algorithms do the hard work. Such an approach cannot guarantee an optimal solution but it can guarantee a solution the user is happy with. It is safe to assume that any user addressing a timetabling problem in an University environment has some idea of the timetable required and is qualified to judge whether a solution is suitable or not.
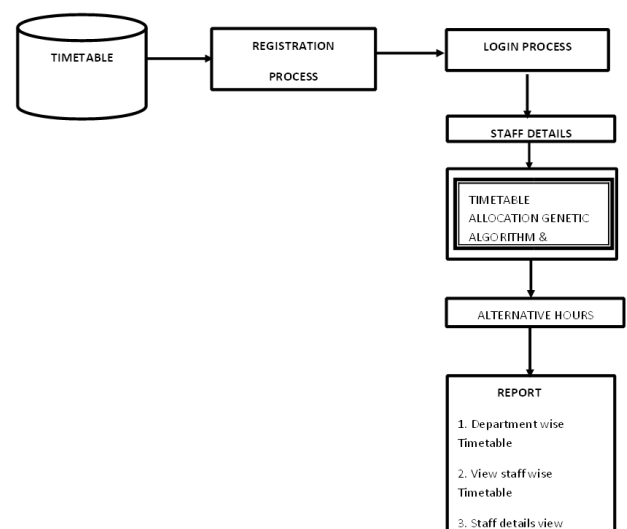
D, Timetable Enhancement of the Management System

Current timetable management system with graph coloring heuristic technique is efficient enough to carry out the courses without clashes manually. Nevertheless, problems occur due to insufficient lab resources and hall facilities. The problem is more complex when some batches have more than three hundred students while the largest hall can be allocated only two hundred and twenty two students. As a result, this research directed to resolve that real problems of an application distributing the courses and labs without collisions. The main goal was to develop a web based Timetable Management System to optimize the resources of the IT faculty and introduce it as a scheduling framework for middle scaled universities. Moreover, investigate the available lab capacity and required resources, studying number of scheduling algorithms, conduct a comparative study of Genetic Algorithm used in other timetabling problems, study the development technologies for the automated timetabling, develop an

automated web based timetable management system were main objectives of this research. Further, some data mining issues without having any solution and lottery games with probabilistic theory also use this algorithm. The major disadvantage of the GA is when the population is large the algorithm execution time also increasing. Chiu-Hung Chen and team workers supplies evidence with the use GA for solving multimodal manufacturing optimization problems in the field of Manufacturing Robots. Creating and maintaining timetables is often a complex task for both people and software. When consider a Mimosa like commercial application, the technical side of Mimosa is kept as simple and as self- contained as possible. The technology is based on a collection of efficient optimization algorithms

III. EXISTING SYSTEM

Some factors that influence timetabling include: the length of the school day, week and year; the number of required contact hours or recommended periods; the number of subjects in the curriculum; the number of teachers; and the availability of facilities. The timetable masters in the college of Computing and Informatics Technology face a series of challenges like; slowness and misallocation of; course units, lecture time, lecture rooms, practical sessions and they always find it hard to make updates of the time tables perfectly because they do not always allocate some course units, lecturers' names on the timetables and even when some are allocated, there is always collision in different lecture, tests or examinations. This results into failure of some students to have specific lectures according to the semester course outline or re-scheduling of specific tests or examination papers. This prompts for a timetable generation system that allocates lecture and examination rooms to specific courses.

IV. SYSTEM ARCHITECTURE

V. PROPOSED SYSTEM

In the proposed system the automated timetable is generated where the data are analyzed during the creation

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using time scheduling algorithm. The timetable will have more flexible and reliable scheme. More accurate timetable is generated in this proposed system. The main aim is individual time table for all staff and include the break will also followed by the system. Timetable Generation System generates timetable for each class and teacher, in keeping with the availability calendar of teachers, availability and capacity of physical resources such as classrooms and the management of the timetable.

4.1 Registration

This module is designed for staff admin who need this project. The new user has to be registered. This system wanted proper authentications level and the user definition for accessing the features behind this system. For getting the features to access the problems users have to register to this system. Once registered the system will provide the access rights to the users to work in this system.

4.2 AdminLogin

This module is the first module. From this page, only the admin can navigate to the project. Only the known person will enter by giving valid information. If the user provides invalid information then permission is denied to navigate to other pages. This authentication module concentrates on the security of the project from unauthorized users. Admin can authenticate only if the cloud authority provides permission else the access is denied to the user.

4.3 StaffDetails

In this module all the necessary information about the staff working in the college is maintained. Staff details include both teaching and non-teaching staff. Staff details such as their qualification, work experience and their area of interest are maintained in this module. This module is for the staff members of the institute all faculty are get a unique token no and a pin for registration by the administrator of the institute by using the registration id and pin the staff will get registration page after filling that form the faculty will get registered in the institute database and they choose a password for login to their profile.

4.4 TimetableAllocation

Create timetable using different time-slots for different standards with the flexibility to edit it anytime with Time Table Module and save time, effort and expenses in a satisfied manner. It detects the conflict in allocation of classes at the same time and alert the users. In the process all department have 6 theory classes and 2 lab class there will allocated at the date and day order wise it will be change. Principal and the HOD have the efficient to change the time table class for every department.

4.5 AlternativeHours

Alternative hours is a unanimous requirement for planning class timings in school. The system can be deployed to schedule a new class, cancel an existing class, and making other changes to a timetable. The alternative class details will be enhanced the while the staff will not able to attend the class or absent at the moment the environment will be

help to know which staff will be the next one to teaching to the class teacher hour.

4.6. Report

Admin will collect all the needed information that will be entered with the application. Department wise timetable details will be submitted as report. Faculty workload during class period will also reported. The module will display the timetable information notification to the end user that will help to enhance the staff to know the weather information, college scheme and, timetable management notification.

VI. CONCLUSION

Timetable generation application will simplify the process of time table generation which may otherwise needed to done using spread sheet manually possibly leading to constraints problem that are difficult to determine when time table is generated manually. The intention of the system is to generate the time table automatically. The project can be measured a valuable system since it helps the academic to improve their procedure of preparing the timetable. By given that support through the Timetable Management system, the convention can be increased to any faculties. If the scheme is successfully upload to host, to assist supervisor, lecturer and staff on how to use the system.

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