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Smart School Administration

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Abstract: ***We are going to make a system that will collect classroom attendance automatically using face detection and recognition technique. The detection and recognition will be done by converting colour image into gray scale images. this images will be taken by the camera. The faces will be detected by current frame which will captured by a camera and will be compared with the stored faces. We will rst review the system architecture and then face detection and face recognition will be done. Various attendance lists will be generated using this collected attendance. Timetable creation could be a terribly tedious and time overwhelming task.to make a timetable it takes a very long time and man hours. Time table is made for varied functions wish to organize lectures at school and schools, to create timing charts for train and bus schedule and lots of a lot of. To create timetable it requires lots of time and man power .In our paper we have tried to reduce these difficulties of generating timetable by Genetics Algorithm. By using Genetic algorithm we are able to reduce the time require to generate time table and generate a timetable which is more accurate, precise and free of human errors.***

Index Terms: Face Detection, Face Recognition, Open CV, Genetic algorithm, timetable, constraints, chromosomes

I. INTRODUCTION

Now, there are many universities around the country and each university consists of many a thousands of students. To handle a large number of students can be a problem especially for attendance. Now the processes to secure the attendance of the most of the universities are still using written manual processes. Manual process means that when starting the class lecture, the lecturer will give a piece of paper and students will check the presence of their names and then be signed. At the end of the class, the lecturer will take back the presence of paper and keep it as a record. Nowadays, most of each university lecturer will provide a list of students to signin for students who attend the class. Cheating often occurs in the presence of students. Therefore, if there is fraud student attendance, lecturer will not be able to identify the problem. For example, other students signed their other friends. So to get rid of this problem, it is ideal for developing a attendance

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Management system using biometric attendance will monitor and record the presence of each student in the class. Typically, the presence of paper requires a lot of time for signing by all students, especially for classes with many students. Students forget to sign it and they assume the presence of class absence. This problem will also occur when the lecturer forget to bring paper to class attendance. Students should write their name on a piece of paper and sometimes the students will take a change for the presence of cheating in the process. Appropriate solution to this problem is to design a system that will record attendance automatically. The class timetabling downside could be a typical planning problem that seems to be a tedious job in each educational institute once or double a year . In earlier days, time table scheduling was done manually with one person or some cluster concerned in task of planning it manually, which takes heaps of effort and time. Planning timetables is one of the most complex and error-prone applications. Timetabling is that the task of making a timetable whereas satisfying some constraints. There area unit primarily 2 sorts of constraints, soft constraints and exhausting constraints. Soft constraints area unit those if we tend to violate them in programming, the output continues to be valid, however exhausting constraints area unit those that if we violate them; the timetable is not any longer valid

Using Genetics Algorithm, a number of trade-off solutions, in terms of multiple objectives of the problem, could be obtained very easily. Moreover, each of the obtained solutions has been found much better than a manually prepared solution which is in use.

II. LITERATURE SURVEY

A. Survey Conducted For Attendance Module

1) Automated Attendance Management System using Face Recognition: proposed by Mrumayee Shiodkar, Varunsinha, urvijain. This papers using Viola Jones face detection method; Local Binary Pattern algorithm for face recognition and Yale database techniques are being used which will give us and overall efficiency of 83.2

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2) Face Detection And Recognition For Automatic At-tendance System:: Was proposed by Dr. Nita Thakare[1], Meghna Shrivastava[2], Nidhi Kumari. System build around this proposal to realize that there are extensive variety of strategies, for example, biometric, RFID based and so forth which are time consuming and non-efficient. So to beat, this on top of framework is that the higher and reliable resolution from each perceptive of your time and security. In this method we've got accomplished to feature to a reliable and effective participation framework to differentiate faces in schoolroom and acknowledge the faces accurately to mark the attending.
3) A Survey Paper On Automated Attendance System :: proposed by Mayank Rahate, Priyanka Auti, Bhargav Kulkarni, Suraj Mayande. On the basis of this method such as defaulters list, students lecture wise, total attendance in percentage and count will be calculated and access to the results will be created on the market for academics in addition as students to stay track of their several attending victimization face recognition and detection algorithm.

B. Survey conducted for automatic timetable generation

Genetic algorithms are general search and optimisation algorithms impressed by processes and usually related to nature. Genetic algorithmic program mimics the method of survival and may be used as a way for finding complicated optimisation issues that have massive areas [10]. They can be used as techniques for finding complicated issues and for looking of enormous downside areas. Unlike several heuristic schemes, that have just one optimum resolution at any time, Genetic algorithms maintain many individual solutions in the form of population.

1) *Chromosome Representation:* Chromosome is a set of parameters which define a proposed solution to the problem that the genetic algorithm is trying to solve. It is often represented as a simple string. The fitness depends upon how well it solves the problem at hand.
2) *Initial Population:* The first step in the functioning of a GA is the generation of an initial population. Each member of this population encodes a potential resolution to a retardant. After making the initial population, every individual is evaluated and allotted a fitness worth in line with the fitness operate. It has been recognized that if the initial population to the GA is nice, then the algorithm has a better possibility of finding a good solution and that, if the initial provide of building blocks isn't massive enough or ok, then it'd be tough for the algorithmic program to seek out a decent resolution.
3) *Selection:* This operator selects chromosomes in the population for reproduction. The fitter it is, the more times it is likely to be selected to reproduce.
4) *Crossover:* In genetic algorithms, crossover is a genetic operator used to vary the programming of a chromosome or chromosomes from one generation to the next. It is analogous to copy and biological crossover, upon that genetic algorithms are primarily based. Cross over may be a method of taking over one parent resolutions and manufacturing a baby solution from them. There are ways for choice of the chromosomes. This operator randomly chooses a locus and exchanges the subsequences before and after that locus between two chro-mosomes to create two offspring. For example, the strings 10000100 and 11111111 could be crossed over after the third locus in each to produce the two offspring 10011111 and 11100100. The crossover operator roughly mimics biological recombination between two single chromo some organisms.
5) *Mutation:* Mutation is a genetic operator used to main-tain genetic diversity from one generation of a population of genetic algorithm chromosomes to the next. It is analogous to biological mutation. Mutation alters one or additional factor values during a body from its initial state. In mutation, the solution may change entirely from the previous solution. Hence GA will return to higher resolution by victimization mutation. This operator every which way flips a number of the bits. For example, the string 00000100 might be mutated in its second position to yield 01000100. Mutation will occur at every bit position during a string with some chance, usually very small.
6) *Fitness Function:* The fitness function is defined over the genetic representation and measures the quality of the represented solution. The fitness function is always problem dependent In particular, in the fields of genetic program-ming and genetic algorithms, each design solution In order to deal with timetabling issues we are proposing a system which might automatically generate timetable for the institute. Course and lectures are going to be regular in accordance with all potential constraints and given inputs and so a timetable are going to be generated.

III. OBJECTIVES

A. Objectives Of This System Is

Taking classroom attendance automatically using face detection and recognition technique .
Automatically Teachers will be allocated classes where previously allocated teacher is not present.

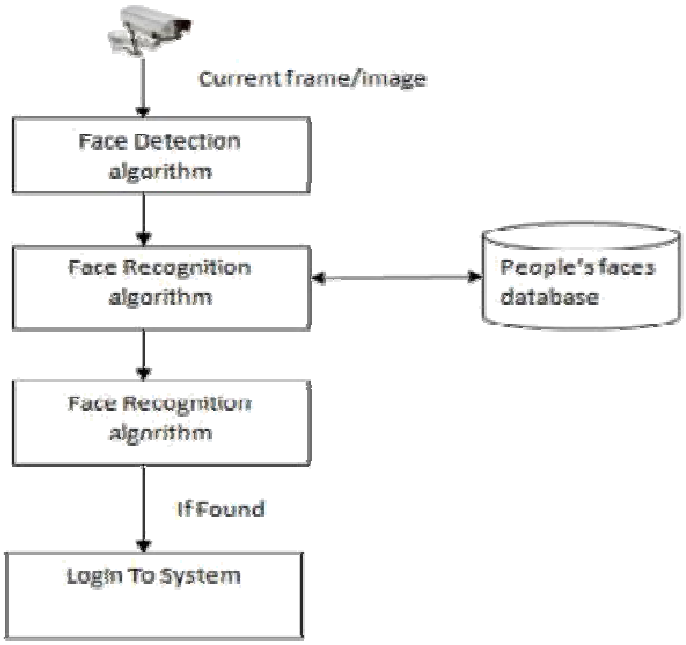
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IV. HARDWARE RESOURCES

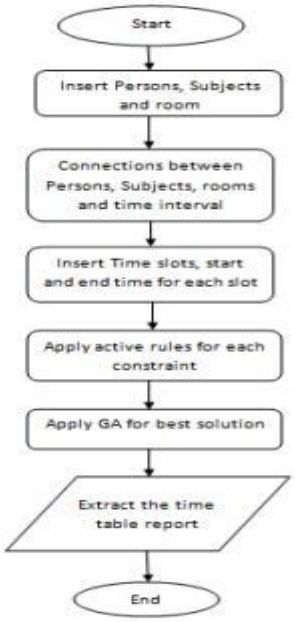
The hardware part consists of the camera. It mainly detects and collects the attendance of the students present in the classroom and saves on the server. Since the application must run over the desktop computer, all the hardware shall require to capture the image will be hardware interface for the system. e.g. HD Camera

V. SOFTWARE RESOURCE

The Smart School system shall communicate with the HD Camera to identify the current frame is human face.
Software that will be used in this system are:-
SQL SERVER 2008 Visual Studio 2015 SAP Crystal Report



Block diagram of proposed architecture of attendance



Block diagram of proposed architecture of automatic timetable generation.

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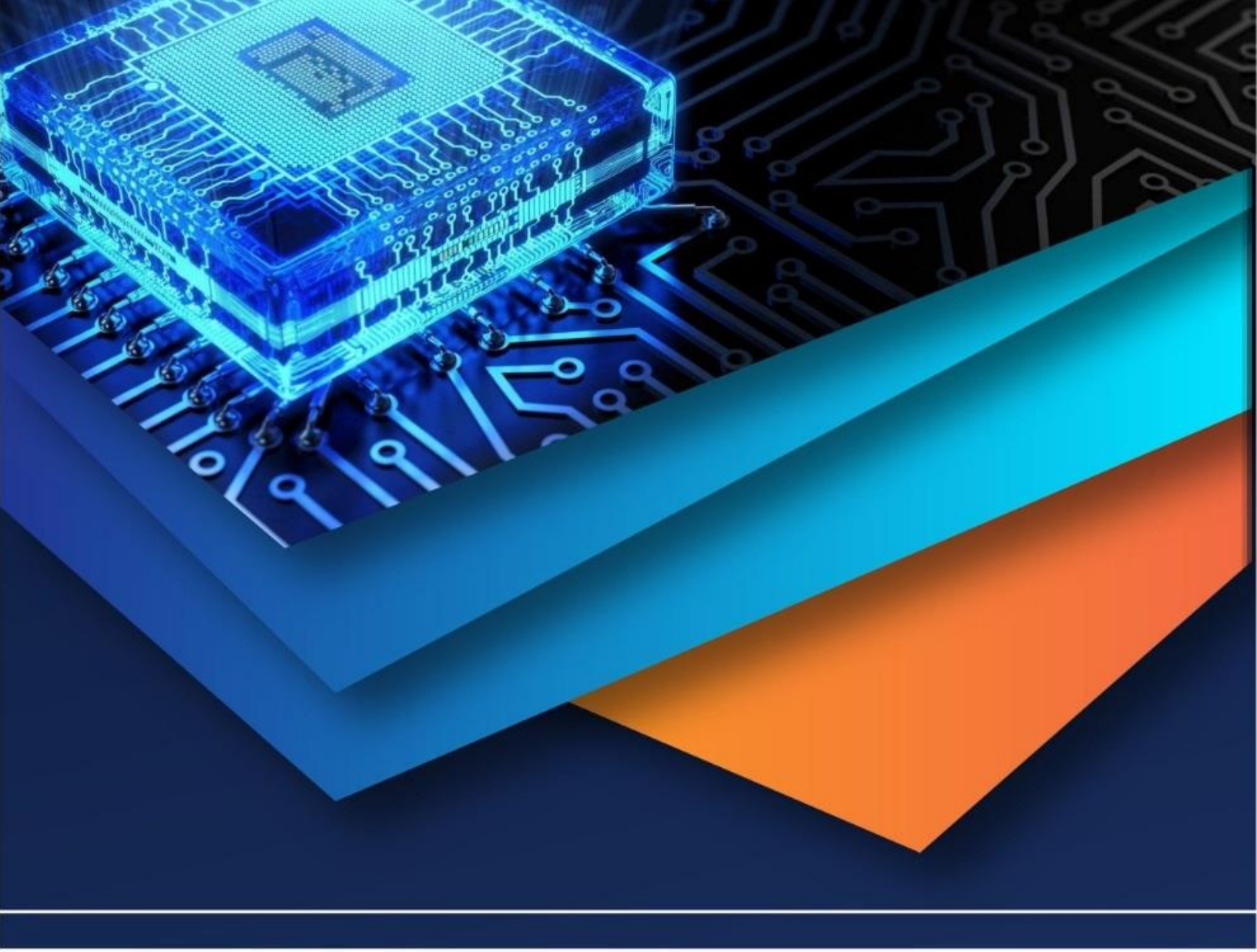
VI. ACKNOWLEDGMENT

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