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ATTENDANCE MANAGEMENT SYSTEM

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Abstract: **Attendance of every student is important irrespective of the fact that the student has attended a particular session or not . Many automatic systems through which attendance can be recorded have been available such as fingerprint scanner, retina scanner, individual person taking attendance which is the manual method, etc. But the present times are a situation of pandemic caused to COVID - 19. Most of these methods are time-consuming and have expensive instruments to handle it. Also, they occupy a certain amount of storage space in the system which may be difficult to organize things in efficient manner. This also comes with the risk of spreading COVID-19 virus as many people will make use of this. The system of attendance that we propose in this paper deals with attendance management system integrated with the details of students. It generates the attendance only if the student is present during the session of the scheduled class or any meeting. Daily maintenance of attendance is mandatory for reaching a given percentage by the campus or institution.**

Firstly, for the attendance of a student to be captured, the student has to login into Microsoft Teams (as we are restricting this paper only to use of Microsoft Teams) for attending the scheduled class or meeting. Once the student is present in the class, the time duration of the student present in the class will be recorded. The student has to meet the certain amount of time to have his attendance to be marked with the status as present. The criteria are that the student should be present for 35 minutes at least to get the attendance marked in ERP.

Keywords: **Attendance, Management, System, Present, Absent, Automation / Automated, ERP, MS Teams, Institution, Algorithm / Algorithm's.**

1. INTRODUCTION

Microsoft is a multinational company which has various application and sectors in operation. Microsoft Teams is such application from Microsoft which has come into limelight during the pandemic days. Various institutions have shifted themselves to a platform of online teaching environment. This is providing us with the privilege of studying at the comfort of our home. But at the same time, it poses many different challenges to the student as well as the teacher. Here, we figure out a difficulty regarding the attendance system which makes it tedious for the teacher. This survey is based on the difficulty mentioned above.

Maintaining the attendance is one of the most vital aspects of an institution during the analysis of the students' performance. Each teacher has their own way of marking the attendance. Some make use of the traditional method (pen and paper). Few teachers have adopted to emerging technology of marking the attendance such as fingerprint scanner, biometric device making us of iris scanner, face recognition, hand geometry and voice recognition, etc. But these methods have a disadvantage such waiting in queue at their time of entry into respective classrooms. Also now given the situation of the pandemic, it is putting everyone using these devices at the risk as the devices are something that many people often touch and use and this could possibly spread the virus in case an infected person makes use of these devices.

In order to simplify the process, we propose a system for marking attendance of the student in a simplified manner.

In Microsoft Teams, student login details will be entered automatically by the profile credentials during the registration and if in case this information is not available, then the student needs to manually enter the details before attending the session. The student can then check which is current scheduled session for the slot scheduled by the organizer.

Microsoft Teams provides us with a certain amount of information which we can use for the automation process. Student details such as status whether the student is on call or on hold or active, batch describes the current year a student is studying, UID Number and the university mail address of the student are available. Then the teacher/organizer of the meeting has to download the attendance in order to update current data information where in the attendance is uploaded the ERP system of the university.

This poses a challenge to the teacher as they need to spend time on manually uploading the inputs to the ERP. This could be tedious as a teacher will have to deal with a number of students everyday and repeating the manual process doesn't seem to be ideal. This also sometimes could result in human error where a student could be marked wrongly.

In order to overcome this, we propose a system in which we link Microsoft Teams with ERP for smooth management of attendance system. This system eliminates the process of downloading and storing of data and then later uploading to ERP system. Therefore, it is an automated system for marking the attendance.

2. PURPOSE AND OBJECTIVE

i. The main aim is to make it responsive and feasible to handle.

ii. Details of each individual should be entered accurately.

iii. Easy maintaining of student information.

iv. Auto calculation of attendance.

v. Maximize security.

3. RELATED WORK

[1]Maumita Mal, Shweta Koli, Aakash Karnani, Rasika Naik, Bhavesh Chetwani

Proposed that they have allotted one complete server system which can manage attendance in school and college. They have designed their framework in such a way that there are no hurdles in between and included many features like user friendly, low power consumption and upgraded to any acquisition system. Used technological devices like biometric and RFID.

[2]Shravya Reddy, Shashi L Reddy, Veena G

Proposed that their software can manage the working modules efficiently. Interconnectivity module reduce time taken to perform the operation. Their software helps to gather information student automatically. Their systems are capable of storing the data from day one including Students as well as teachers. And maintain these details dynamically, therefore reducing traditional pen paper method.

[3]Saleh Alghamdi

Proposed that traditional method is time consuming and effort in case of huge class. The mordent method solution has disadvantages in terms of high-end technology and have less functionality. If we take biometric scan (fingerprint scanner) require student to wait in queue in front of devices which not a perfect solution considering there's time consuming for the lecturer. This system is eradicating the above issue for both the members that is student and teachers. This is RFID technology which is mobile app based, it can be monitor the attendance of students at low cost without limitation of any other systems.

4. PROPOSED MODEL

In the proposed model, we first capture the attendance by recording the timing/duration of the student attending the session/class on Microsoft Teams and we link the attendance part of Teams to the ERP portal of that particular class. During the intermediate zone of linking, we have placed the decision tree algorithm to determine if the student has joined the class or not and accordingly find the student on the ERP portal and then mark the status of his/her attendance based on the criteria to be fulfilled.

Decision Tree:

Decision tree is also known as CART algorithm which is basically known as Classification and Regression Tree algorithm. Decision is just like true or false statement if it is true, it executes the further statements into sub-divisions of

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tree. Decision tree can contain both categorical data as well as numeric data. It has various terminologies referred to root node, leaf node, branching, splitting, pruning, parent and child node to better enhancement for making best decision.

Decision tree is used mostly because it imitates human type thinking ability, so it is easy to understand and determine on the given problem statement. Decision tree is basically based on the natural tree structure.

In this algorithm the structure goes from decedent to further generation to satisfies the goals of the current mechanism. There's a split of dataset into divisions. Divisions of dataset are created to plot data of which ever data points are related to statement problem. Division of the dataset in this algorithm has head and leaf nodes.

Structure of the decision tree is shown below.

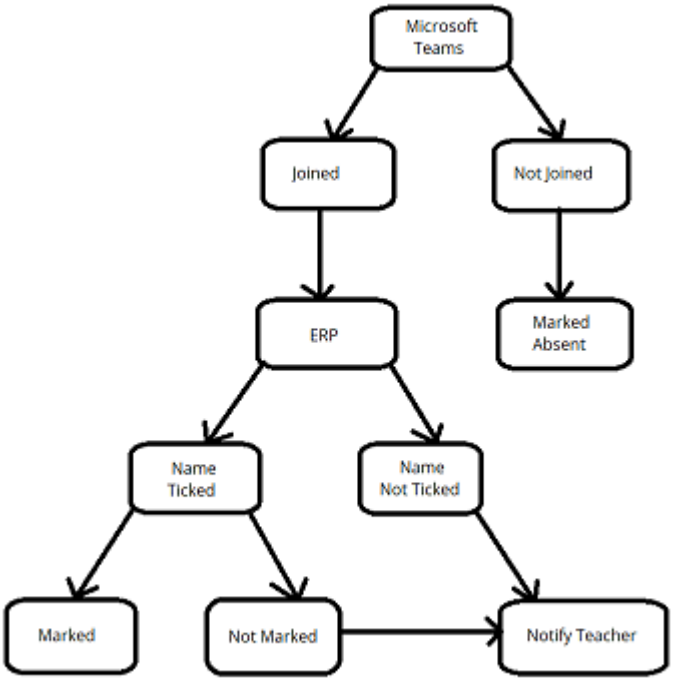

Figure 1: Flowchart of decision making in decision tree

In the above figure, you can see how the decision tree algorithm takes the decision to mark the attendance. Firstly, we check on teams if the student has joined the class via Teams. If the student has joined the class, then they will be screened for attendance duration. After meeting the required criteria, the student will then be mapped to ERP where the name is searched and on finding the name, the attendance will be marked as present.

In the case when the student doesn't join the class, the student is directly marked as absent for the class. In the case when the student has joined the class and the name is not found on ERP portal, the teacher would be intimidated about the missing name and would be asked to enter the attendance manually or make the corrections in the portal. Also, this would be repeated in the case when the student is found on ERP Portal and the attendance is not marked due to any error.

5. RESULTS

This system successfully captures the attendance of students. The prototype manages to map individuals name box is ticked or not. We can employ the decision tree algorithm for effortless work.

The performance of this system was acceptable and would be considered for future implementations especially considered because of short execution time. Developing this system would be efficiently used by all faculty. Also, this system is a cost effective process which can be used by anyone and any institution.

During the testing of the prototype, this model rendered 76% precision score and 76% F1-score. With further more data captured, the accuracy of this learning model can be vastly improved.

The attendance is done by clicking of checkbox next to student's name that are present

6. CONCLUSION AND FUTURE ENHANCEMENT

In this survey paper, we have planned to make easy and comfortable way of marking attendance. Attendance Management System is a vital component of any institution. The tedious method of marking can be resolved by adding an automated system. The actual focus of this method is to provide with a system that can be robust and easy to use and be available to everyone at a lower cost. This process is highly secured, feasible and readily available to make full use of it through any browsers. The future enhancement of this can be done by merging Microsoft Teams with ERP website. Also, the faculty can check their dashboard how many where present/absent in order to know if the student is having enough attendance to allow the student for the final exam. We can make this to a business intelligence tool to get all data analytics for the requires campus or institution for monitoring the performance and better development of the company's growth and institution welfare.

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