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Digital Attendance System using iBeacon along with Indoor Navigation

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Abstract: ***The attendance mechanism in the classrooms have always been an interesting task as it includes proper marking of attendance for each candidate against his / her own roll call. Also the major concern for the attendance marking in classrooms is the time and resources being wasted for the complete process. In the process now, attendance is still done manually using paper where the paper will be signed by the students. But this will cause problems. The first problem is the use of excess paper and the second problem is the difficulty for the administration to recapitulate student attendance results. This is because so many attendance papers must be analyzed by the administration. Therefore, a student attendance system is in need that can collect data quickly, efficiently and accurately. College campuses can be large, confusing, and intimidating for new students and visitors. Finding the campus may be easy using a GPS unit or Google Maps directions, but these changes when you are actually on the campus. There is no service that provides directional assistance within the campus itself. This paper presents the architecture and design specifications for a campus assistant application on an Android platform***

I. INTRODUCTION

Attendance Management System is software developed for daily student attendance in Engineering colleges. If facilitates to access the attendance information of a particular student in a particular class. In both classroom settings and workplaces, attendance is mandatory. Poor attendance by a student in a class may affect their grades or other evaluations. Poor attendance may also reflect problems in a student's personal situation, and is an indicator that "students are not developing the knowledge and skills needed for later success". The purpose of this study is to make attendance system applications of students and class schedule notifications based on IBEACON, it is expected that the attendance process will be more efficient and can be easily monitored by lecturers and by the central administration. College campuses can be large, confusing, and intimidating for new students and visitors. Finding the campus may be easy using a GPS unit or Google Maps directions, but this is not the case when you are actually on the campus. There is no service that provides directional assistance for the campus itself. This thesis proposes a driver assistant application running on a platform that can direct drivers to different buildings and parking lots in the campus.

The application's lets the user select a user type, a campus, and a destination through use of information given by the system. Once the user submits the needed information, then next portion of the application runs in the background. The app retrieves the Campus Map (image file) created by the mapping tool that was constructed for this project. The data containing all the map

Elements is then parsed and stored in a hierarchal data structure. The resulting objects are then used to construct a campus graph and will be sent to the user in the android app. When the path to the destination has been discovered, the campus map with the computed path overlaid is displayed on the user's device, showing the route to the desired destination.

II. RELATED WORK

A. Development of Smartphone-based Student Attendance System

Student's attendance tracking is a vital issue in order to monitor students' performance in the classroom as well as in their studies. It becomes a key concern because the university authority maintains a rule that one student can only attend in the exam if his/her attendance is higher or equal to several percentages (60%,70% or 80% etc.) otherwise not. The traditional attendance system needs student's to physically sign the attendance sheet each time for the attendance of each class. This is unnecessarily time-consuming to notice and mark student's name on the attendance sheet. This also happens that some students may accidentally or willingly mark the student's name like as proxy. The hard copy of attendance sheet may get lost. Using Smartphone like as Android Technology the course teacher will be able to take attendance easily by our designed mobile application and save the attendance in the phone as well as in server and can check percentage and also can print as hard copy. Using the stored information, this system is able to mark attendance, marking intruders' entry, attendance percentage calculations, send emails, and send SMS to the guardian to keep them updated about their child's attendance at the Institute. The designed system has an online access from any place and any moment which may extraordinarily assist the course teacher with keeping track of their student's attendance.

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B. Online Attendance System ASHISH MAHALLE , SOMIT MESHRAM , PRATHMESH WAKODIKAR , KETKI KHANTE(2018)

Online Attendance System is a web portal designed for taking and managing student's attendance in institutions by means of Smartphone as well as desktops. Till now the college uses paper records. The project use database to keep the track of attendance and is used to generate a report for individual student. The whole system is handled by admin about the faculties profile and student's data. The class in-charge can add new student. The head of department can add new staff, view staff and student and view the student attendance report. The main purpose of developing this web portal is to overcome the traditional way of taking and managing attendance. Another aim is to automate the task of report generation at the end of the session.

C. Android Based Attendance Management System Shrinivas kendre , Samadhan Markad , Mrs S. S. Jogdand (2018)

Over the years the manual attendance management has been carried across most of educational institutions.To overcome the problems of manual attendance, We have developed "Android Based Attendance Management System". Android Based Attendance Management System is based on Android, which can be implemented on any Android Phone. In This application, PHP is server side language, MySQL and PHP is used as back-end design and HTML, CSS and JavaScript are used as front-end tools. The system communicates with database residing on a remote server. It calculates automatically, the attendance percentage of students without any manual paper-based work. Managing the attendance using traditional approach is really a cumbersome process. The person has to be maintain the attendance record in registers and file using pen and paper. The problem with this approach is that it requires lots of paper which are the part of our non-renewable natural resources. We are in the age, where we have to think about sustainable development. Managing the attendance using mobile phones, provide an alternative way in this direction. Communication between teachers and the parent is also an important issue that should also be considered, because parent can only get the information about their ward after the interaction with teachers. So, we also tried to bring the system which enables parent to receive the information of their ward of regularity on daily basis.

III. PROPOSED WORK

We aim to develop very user friendly and easy to use android application, the speed of the application is very fast too. admin will be using the web application and the students will be using the android part of this system. Admin will add subjects for the respective semesters, add lecturers for respective semesters and respective subjects. admin will also add students to the respective semesters and subjects and time tables for the respective semesters. For example in a particular day, how many classes are there, how many subjects and to that how many lecturers are allotted etc will be easily found. Only the allotted admin can add the time table. Student can log in through their mobile phones. After logging in,the application will ask the student to activate Bluetooth. After Bluetooth is activated the application will check the existence of Ibeacon. Each existing Ibeacon represents information about the name of the room, the room code, and what courses are registered in the room. If Ibeacon is detected, a notification will appear on the user's smart phone, the notification contains information about the name of the room where the Ibeacon is located. Attendance details are updated only if student are physically present in the class room where Ibeacon are located and the attendance will taken through finger print scanner of smart phones.

A. Advantages

1) Cost efficient
2) Time saving
3) Accurate
4) Reduce manual stress

IV. EXISTING METHOD

Colleges monitor the students' attendance the simple way by just using an attendance sheet in registers. Having a sign in attendance sheet can be very quick and convenient. But it takes long time for the lecturer to call out the name of each student and mark attendance. There are chances of proxy attendance. However, this manual system could be outdated and is difficult to maintain. These registers may be stolen, lost or misplaced etc. At such scenarios it is very difficult to even judge what to do.

A. Limitations Of The Existing System

1) Manual way of maintaining attendance in attendance sheets/registers.
2) Registers can easily get misplaced or lost.
3) Since only one copy is maintained, it is inconvenient if it gets lost
4) Even if student is absent, friends can give proxy attendance
5) Lecturing time will be reduced, as time is spent more on taking attendance

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V. CONCLUSION AND FUTURE WORK

The proposed system is developed using java programming language based on android technology. This application is an automated system for taking attendance of the students by the staff which will reduce manual work and time. In future, this application can be enhanced in following ways: The attendance of the students can be taken by implementing face recognition ie, by capturing face images of students. The application can be made use to circulate the information or notice to the students and staff in the colleges.

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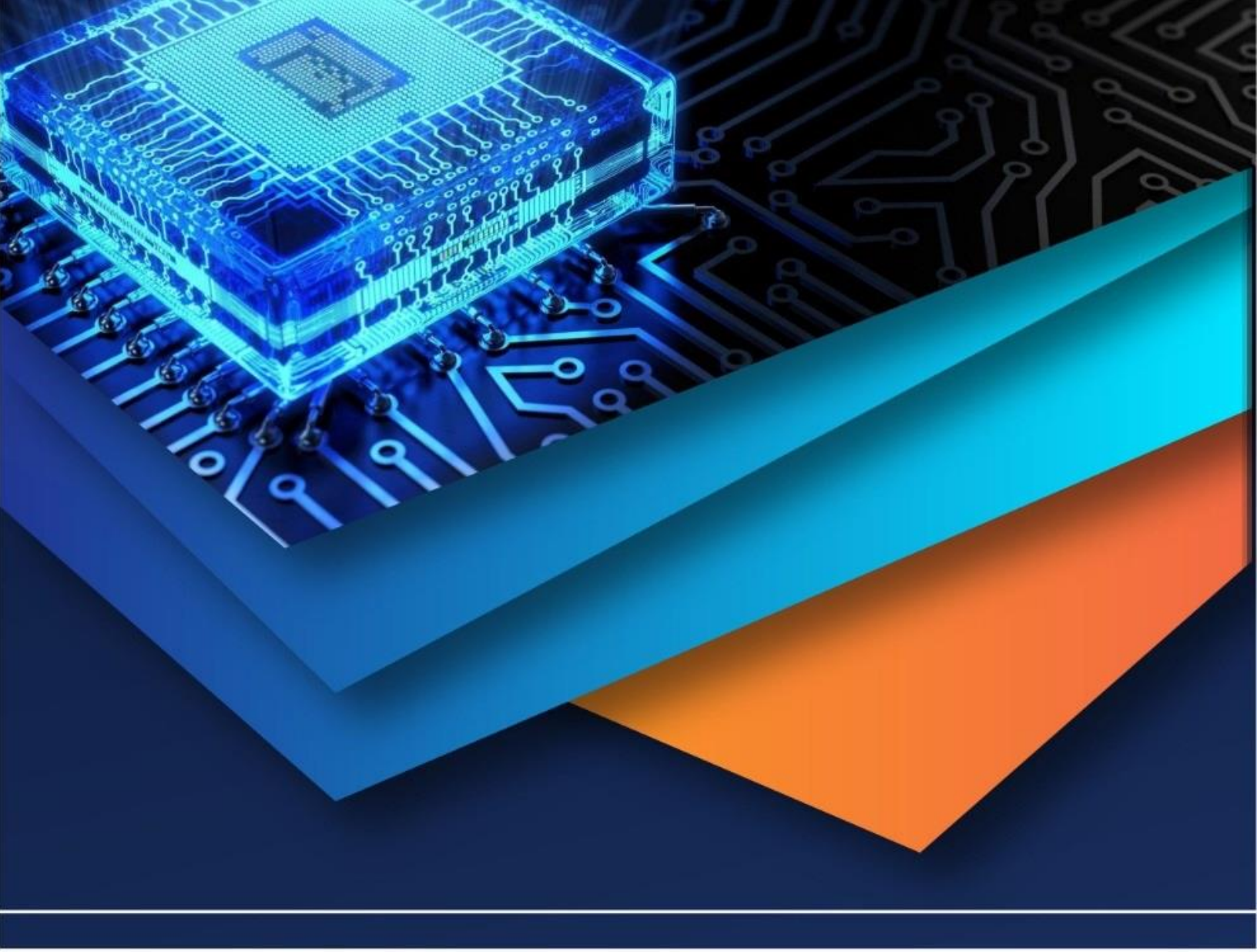

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