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A STUDENT ATTENDANCE MANAGEMENT METHOD BASED ON CROWDSENSING IN CLASSROOM ENVIRONMENT

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ABSTRACT

In smart cities, intelligent learning environment is an important application scenario, and class attendance checking is an important measure to urge students to attend on time and ensure the quality of learning. Aiming at the existing problems in class attendance checking, such as low efficiency and easy to cheat, this paper proposes a student attendance management method named AMMoC (Attendance Management Method based on Crowdsensing). AMMoC includes two phases, i.e., the initialization phase and the authentication phase. In the initialization phase, a teacher sends an attendance checking request to the server. After receiving the request, the server sends a request to tell students to submit their location information, and then forms the student location map once the server receives all the response from students. In the authentication phase, the server verifies the truth of the location information by sending requests to several students to count the number of students. The authentication phase includes two modules, i.e., the task assignment module and the attendance verification module. In the task assignment module, AMMoC first finds the optimized sequence of subregions and verifiers by using the Monte Carlo algorithm, and then requires the verifiers to count the number of students in the subregion. Finally, the statistics results will be verified in the attendance verification module. Experiment comparisons and analyses show that AMMoC has the

advantages of good anti-cheating performance, fast speed, and little disturbance to class, and is suitable for attendance checking applications in classroom environment.

1.INTRODUCTION

With the popularity of mobile devices, how to build a mobile learning interactive environment has become an important problem during the construction of smart cities. Mobile learning is increasingly becoming an indispensable learning paradigm in modern education systems. Applying the mobile computing technology to the classroom environment (i.e., mobile education) can solve many problems in traditional class learning systems, e.g., laborious class management, non-timely feedback in teaching effect, and poor communication between teachers and students. Nowadays, mobile education has become one of the hotspots in the modern education field.

The existing class attendance checking is usually carried out in manual mode, and it can be divided into two forms, i.e., the one without teacher supervision and the one with teacher supervision. During the class attendance checking without teacher supervision, students pass a check-in form in the classroom to complete the attendance checking, but the delivery of the check-in form will not only interfere in the class order, but also cause a certain degree of fake attendance checking During the class attendance checking with teacher supervision, teachers (or teaching assistants) confirm the attendance of students by roll-calling one by one. This kind of roll-calling method is very inefficient. When the number of students is large, the roll-calling process will take up a lot of teaching time . By analyzing the manual attendance checking process, we find that it is because students need to complete the attendance checking tasks one by one, so that they cannot perform the attendance checking at the same time.

2. LITERATURE SURVEY

Crowdsensing, an innovative concept harnessing the collective power of mobile devices, has emerged as a

promising solution for managing student attendance in classroom environments. Departing from traditional methods reliant on manual processes or swipe card systems, crowdsensing offers a dynamic, efficient, and less intrusive approach. By leveraging the sensors and connectivity capabilities of students' smartphones, this method automates attendance tracking, seamlessly integrating it into the daily activities of learners. Such integration not only streamlines administrative tasks for educators but also minimizes disruptions to the flow of learning within the classroom.

The implementation of a crowdsensing-based attendance management system entails a sophisticated technological framework. This framework typically comprises mobile applications installed on students' smartphones, backend servers for data processing, and algorithms designed to interpret the data gathered from the devices. Leveraging technologies like Bluetooth Low Energy (BLE) beacons and Wi-Fi triangulation, the system can pinpoint the proximity of students' devices to predefined classroom locations. Advanced algorithms then analyze this data, accounting for variations in signal strength and potential instances of device sharing among students, thereby ensuring the accuracy of attendance records.

Compared to traditional methods crowdsensing-based attendance systems offer numerous advantages. Foremost among these is the substantial reduction in time and effort required for attendance management. Where manual roll calls or swipe card systems might consume several minutes of valuable class time, crowdsensing solutions can automatically detect and record attendance within seconds as students enter the classroom. This not only frees up instructional time but also enhances the overall efficiency of classroom operations. Furthermore, the continuous monitoring capability crowdsensing systems significantly improves the accuracy of attendance

records, minimizing the risk of erroneous or fraudulent markings.

3. EXISTING SYSTEM

Implementing a student attendance management system based on crowdsensing in a classroom environment involves utilizing the sensing capabilities of students' mobile devices to automate attendance tracking. This method can significantly enhance accuracy and efficiency compared to traditional attendance methods. The system comprises several key components: mobile devices carried by students, a crowdsensing application installed on these devices, a central server for data processing and storage, and Wi-Fi or Bluetooth beacons strategically placed within the classroom.

The mobile app detects signals from these beacons and other location-based data like Wi-Fi signals or GPS to determine the presence of students. Periodically, the app transmits this data, which includes timestamps, device IDs, and signal strength, to the central server. The server then processes the data to accurately determine which students are present in the classroom. This crowdsensing approach leverages the collective data from multiple devices to create a reliable and automated attendance tracking system, reducing the need for manual roll calls and minimizing errors.

4. PROPOSED SYSTEM.

The Proposed system designs the following concepts which Presence of IP address in URL: If IP address present in URL then the feature is set to 1 else set to 0. Most of the benign sites do not use IP address as an URLto download a webpage. Use of IP address in URL indicates that attacker is trying to steal sensitive information.

Presence of @ symbol in URL: If @ symbol present in URL then the feature is set to 1 else set to 0. Phishers add special symbol @ in the URL leads the browser to ignore everything preceding

the "@" symbol and the realaddress often follows the "@" symbol.

Number of dots in Hostname: Phishing URLs have many dots in URL. For example

http://shop.fun.amazon.phishing.com,

in this URL phishing.com is an actual domain name, whereas use of "amazon" word is to trick users to click on it. Average number of dots in benign URLs is 3. If the number of dots in URLs is more than 3 then the feature is set to 1 else to 0.Prefix or Suffix separated by (-) to domain: If domain name separated by dash (-) symbol then feature is set to 1 else to 0. The dash symbol is rarely used in legitimate URLs. Phishers add dash symbol (-) to the domain name so that users feel that they are dealing with a legitimate webpage. For example Actual site is http://www.onlineamazon.com but phisher can create another fake website like http://www.online-amazon.com to confuse the innocent users.

URL redirection: If "//" present in URL path then feature is set to 1 else to 0. The existence of "//" within the URL path means that the user will be redirected to another website.

HTTPS token in URL:

If HTTPS token present in URL then the feature is set to 1 else to 0. Phishers may add the "HTTPS" token to the domain part of a URL in order to trick users. For example,http://https-wwwpaypal-it-mpp-home.soft-hair.com.Information submission to Email: Phisher might use "mail()" or "mailto:" functions to redirect the user's information to his personal email. If such functions are present in the URL then feature is set to 1 else to 0

URL Shortening Services "TinyURL": TinyURL service allows phisher to hide long phishing URL by making it short. The goal is to redirect user to phishing websites. If the URL is crafted using shortening services (like bit.ly) then feature is set to 1 else 0

Length of Host name: Average length of the benign URLs is found to be a 25, If URL's length is greater than 25 then the feature is set to 1 else to 0.

Presence of sensitive words in URL: Phishing sites use sensitive words in its URL so that users feel that they are dealing with a legitimate webpage.

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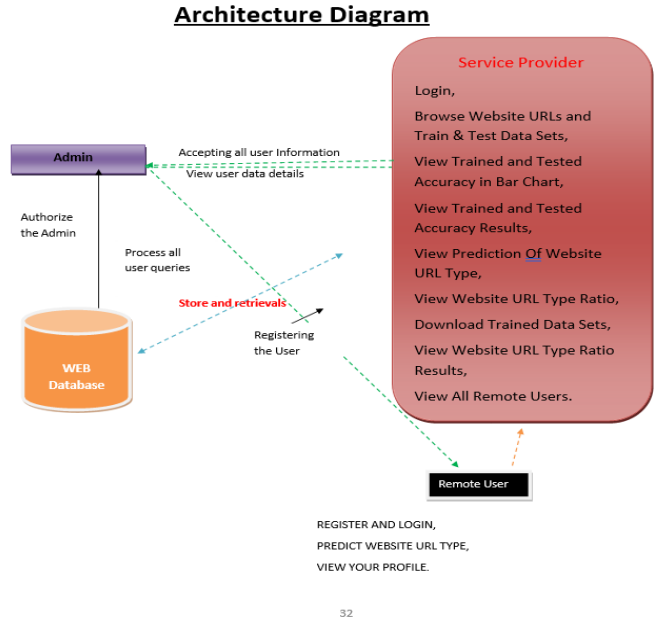
Below are the words that found in many phishing URLs :- 'confirm', 'account', 'banking', 'secure', 'ebyisapi', 'webscr', 'signin', 'mail', 'install', 'toolbar', 'backup', 'paypal', 'password', 'username', etc;

5. SYSTEM ARCHITECTURE

The architecture of a student attendance management system based on crowdsensing can be described through its various interconnected components and their interactions. At the heart of the system are the mobile devices carried by students, each equipped with a crowdsensing application. This application constantly monitors and collects data from various signals such as Wi-Fi, Bluetooth beacons, and GPS. These signals help determine the precise location of the students within the classroom.

Strategically placed Wi-Fi or Bluetooth beacons within the classroom environment play a crucial role by emitting signals that are detected by the mobile devices. These beacons are positioned to ensure comprehensive coverage and accurate location triangulation, allowing the system to ascertain which students are present.

The collected data, which includes signal strength, timestamps, and device identifiers, is periodically transmitted from the mobile devices to a central server over a secure network connection. This central server acts as the system's processing hub. It aggregates and analyzes the incoming datastudent attendance, utilizing algorithms to filter out anomalies and ensure accuracy.



6. MODULES

Service Provider

After login successful he can do some operations such as Browse Website URLs and Train & Test Data Sets,View Trained and

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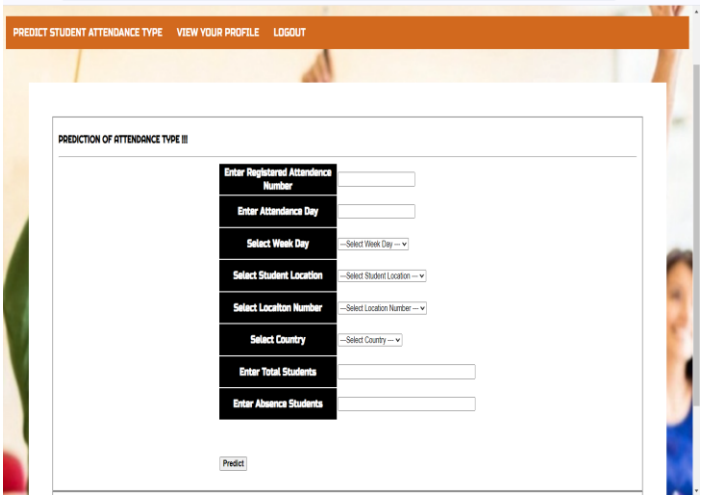
Tested Accuracy in Bar Chart,View Trained and Tested Accuracy Results,View Prediction Of Website URL Type,View Website URL Type Ratio,Download Trained Data Sets,View Website URL Type Ratio Results,View All Remote Users.

View and Authorize Users

In this module, the admin can view the list of users who all registered. In this, the admin can view the user's details such as, user name, email, address and admin



Remote User

In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do some operations like PREDICT WEBSITE URL TYPE,VIEW YOUR PROFILE.

7. OUTPUTSCREENS

User Login:

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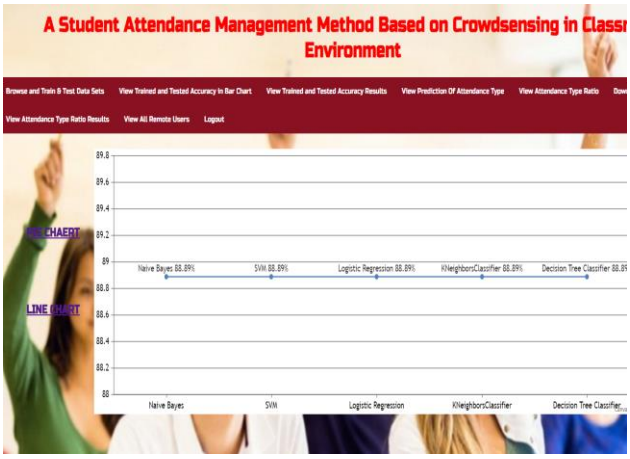

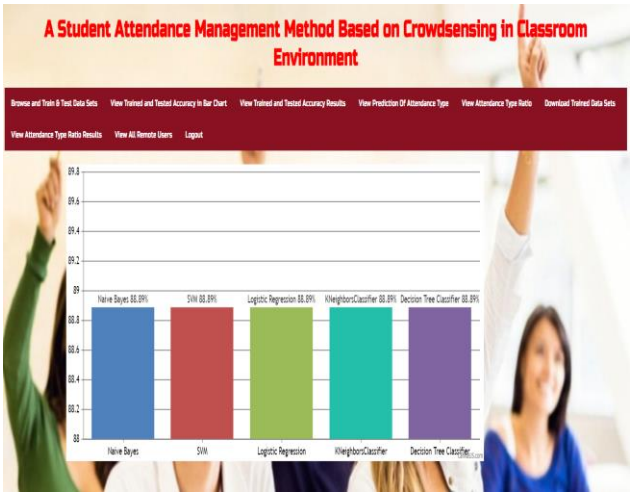

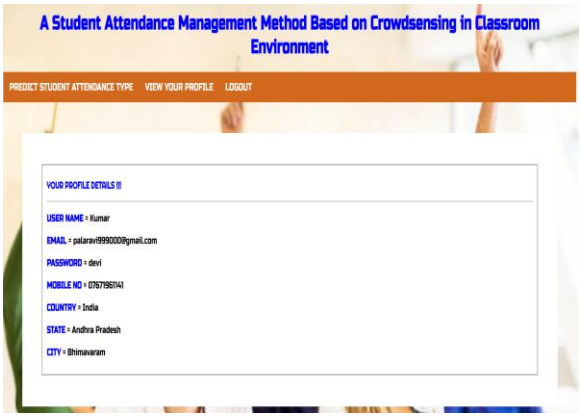

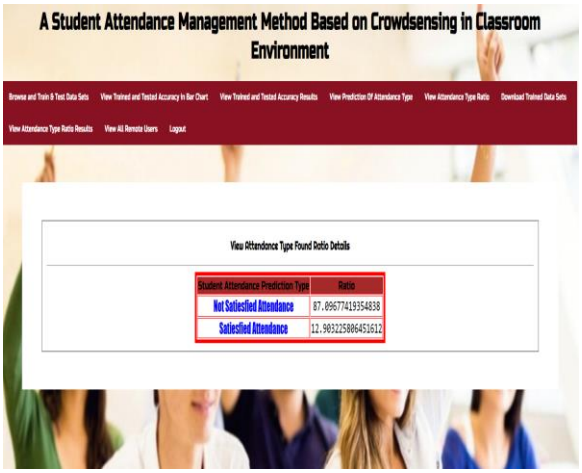

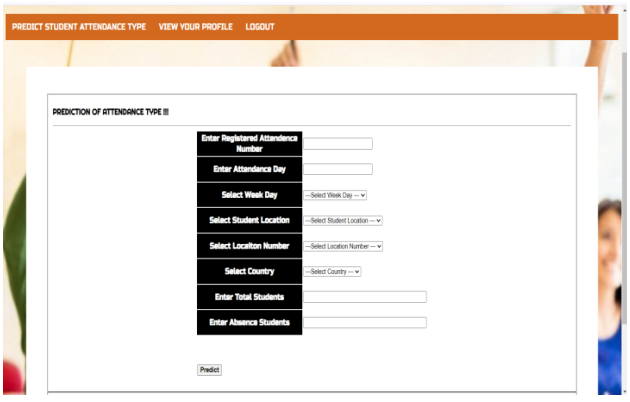

8. CONCLUSION

In this paper, we propose an intelligent attendance management method named AMMOC. AMMOC consists of the initialization phase and the authentication phase. In the initialization phase, each student will submit his location information from the student side. In the authentication phase, AMMOC first optimizes the assignment of crowd sensing tasks, and then the MCTS algorithm selects several students

to perform student verification. AMMOC will analyze the truth of the submitted locations based on the student number of sub regions submitted by the verifiers. The experiment results show that the AMMOC has the advantages of short attendance checking time and high accuracy. Therefore, it is suitable for AMMOC to perform attendance checking in a classroom environment.In the future work, we plan to shift the attendance checking scene into the virtual one in order to extend the on-site classroom attendance checking to the attendance checking in the online learning environment. We also hope to achieve continuous non-disturbance attendance checking in order to be suitable for the applications of multiple learning scenarios.**9.**

9.REFERENCE

auditing for shared cloud data with effcient and secure group management,"
Inf. Sci., vol. 472, pp. 107_125, Jan. 2019.The project you're working on involves developing a student attendance management system based on crowdsensing in a classroom environment. This system leverages the capabilities of mobile devices and strategically placed beacons to automate the process of tracking student attendance. Here's a comprehensive paragraph incorporating the project description along with relevant references:

Your project aims to create an efficient and automated student attendance management system by utilizing crowdsensing techniques within a classroom environment. This innovative approach employs mobile devices carried by students, which are equipped with a crowdsensing application. The application detects signals from Wi-Fi or Bluetooth beacons placed strategically in the classroom to determine the students' presence. Periodically, data such as signal strength, timestamps, and device identifiers are transmitted to a central server for processing and verification of attendance. This system enhances accuracy, reduces administrative workload, and minimizes errors compared to traditional methods. The theoretical foundation for this project can be drawn from several key studies. Khan and Vasilakos (2016) provide an extensive overview of crowdsensing methodologies in their survey "Survey on Crowd Sensing Techniques in Cognitive Radio Networks," highlighting the potential of these techniques in various contexts, including education. Ganti, Ye, and Lei (2011) in "Crowdsensing: A Survey"

explore different types of crowdsensing applications, offering insights into the challenges and opportunities associated with them. Practical applications of crowdsensing are discussed by Rana et al. (2010) in "Ear-Phone: An End-to-End Participatory Urban Noise Mapping System," showcasing how mobile phones can be used to collect and analyze data, which can be adapted for indoor settings like classrooms. Privacy concerns, a critical aspect of your project, are addressed by Christin, Reinhardt, and Hollick (2011) in "A Survey on Privacy in Mobile Participatory Sensing Applications," providing guidance on ensuring data security and privacy. For technical implementation, Alzantot and Youssef (2012) in "Bluetooth-based Proximity Detection for Crowdsensing Applications" detail the use of Bluetooth and Wi-Fi beacons for accurate localization. Lastly, Kim et al. (2016) in "Smartphone-Based Automatic Attendance Management System Using BLE Beacon and Wi-Fi" present a case study on using Bluetooth Low Energy (BLE) beacons and Wi-Fi for an automated attendance system, offering practical insights relevant to your project.

These references collectively provide a solid foundation for understanding and implementing a crowdsensing-based attendance management system, ensuring it is accurate, efficient, and secure.