**A faculty attendance monitoring system using facial recognition**

A Capstone Project Presented to the Faculty of the

College of Information, Computer and Communications Technology

University of San Jose – Recoletos

Cebu City, Philippines

In Partial Fulfilment

Of th e Requirements for the Degree of

Bachelor of Science in Information Technology

By

Pogosa, JC A.

Cañete, Luigi P.

Labra, Glenn Phillip G.

Dr. Jovelyn C. Cuizon

Adviser

**ENDORSEMENT**

**ACKNOWLEDGEMENT**

**ABSTRACT**

<This will be done at the end of the study. This comprises the purpose of the study, methodology, results and conclusion>

Keywords: <Write the important words or concepts of your study. If your study will be queried from a search engine, what keywords will the user so that your study will be the result of the query.>

**Table of Contents**

**LIST OF FIGURES**

**LIST OF TABLES**

# CHAPTER I

**INTRODUCTION**

## RATIONALE OF THE STUDY

Attendance is the concept of people, individually or as a group, appearing at a location for a previously scheduled event [1]. Attendance tracking data is useful for a number of individuals: managers, employees, employers, supervisors, accountants, but also teachers, students, and their parents. There are 2 main reasons why tracking attendance is vital: It reduces absenteeism and It provides data that shows how productive you are. When you know your attendance is tracked, you’ll aim to limit your unjustified absences. When you track your attendance, you’ll be able to pinpoint the days you spent working [2]. Manually checking an individual’s attendance can also be a hassle for the checker’s part, which in some cases, leads to the inaccuracy of the attendance data being logged.

There have been some applications that were created to check attendance. These applications were made to make attendance checking easier and hassle-free.

The following are the apps: WiFi Attendance, Time Clock Wizard, and Virtual Attendance. WiFi Attendance is a cloud-based attendance tracking system that uses office WiFi to mark employee attendance. Employees within the pre-set office WiFi range can mark their attendance through the app. Time Clock Wizard is a cloud-based solution offering more than just attendance tracking. They have all the features related to attendance such as payroll calculation, leave management and employee scheduling. Since the service is cloud-based, the employees and managers can access the dashboard from any device, at any place. Finally, Virtual Attendance is a simple attendance app that works in both iOS and Android smartphones. The admin generates profiles with QR codes for each employee. This QR code is tracked using an Apple device at the office [3].

Although the apps were made to become an alternative to manual attendance checking, there are still gaps that need to be filled. WiFi attendance seems like a nifty app, but it lacks a feature that can identify the identity of the employee. Time Clock Wizard somehow solves the identity identification problem. It captures a photo of the employee at the time of the time-in, which prevents buddy login and promotes honesty in remote office locations. These apps surely are reliable employee attendance checkers. However, there are still two things that these apps are coming off short: checking the presence of the employee in between work hours, and dishonest time-in authorizations.

To top off the gaps of these applications, the developers developed the Oversee. Oversee is a mobile web application that uses the technology facial recognition to identify the teaching staff from time-in, during class hours, and time-out. This application is for school teachers, to help them get their attendance checked accordingly and without bias. Oversee will notify the teachers of their late and absences while also letting them give remarks to the person-in-charge, to justify those late and absences. The monitoring system of this app works throughout each class session, which scans for the teacher's face around the room to ensure the teacher’s presence. The system will also mark the teacher as questionable if the system does not detect the teacher for three consecutive checkings, given that the system checks the teacher for 5 times, including the time-in and time-out. The facial scanners of Oversee are implemented through the CCTVs of each classroom inside of the school premises.

## REVIEW OF RELATED LITERATURE

Teacher Attendance calls for developing policies and practices that will reduce absences among the instructional staff. It suggests creating a school climate where attendance is valued by students and teachers, alike. Investing in a system that keeps effective teachers in the classroom should be a priority for school leaders and policymakers. A key part of that effort is creating a school climate in which consistent teacher attendance is the norm. That said, teachers have to demand, stressful jobs that often include long hours outside the normal school day. Their job requires that they always be “on” regardless of how well they feel. For attendance policies to be effective, they must be flexible for a job that is unique in many ways [4].

As common sense suggests, teacher attendance is directly related to student outcomes: the more teachers are absent, the more their students’ achievement suffers. When teachers are absent 10 days, the decrease in student achievement is equivalent to the difference between having a brand-new teacher and one with two or three years more experience. Worse yet, several studies have found there to be a disproportionately high rate of teacher absenteeism in schools serving low income and minority students, providing yet another obstacle to closing the achievement gap [5]. Improving teacher attendance most likely requires greater focus in which detailed attendance data are tracked both by the school principal and the central office. Teacher attendance needs to be a higher and more public priority for school districts that are complemented by school cultures that expect excellent teacher attendance [6]. The regular and prompt attendance of teaching staff members is an essential element in the efficient operation of the school district and the effective conduct of the educational program. Staff member absenteeism disrupts the educational program and the Board of Education considers attendance an important component of a staff member’s job performance. A teaching staff member who fails to give prompt notice of an absence, misuse of sick leave, fails to verify an absence under Board policy, falsifies the reason for an absence, is absent without authorization, is repeatedly tardy, or accumulates an excessive number of absences may be subject to appropriate consequences, which may include the withholding of a salary increment, dismissal, and/or certification of tenure charges [7].

Current teacher absenteeism averages between 8-10%. This equates to over one full year of every child’s K-12 education being taught by substitute teachers. One statewide study indicated 71% of personnel directors deemed absenteeism as one of the leading problems in schools. Additional research suggests that economically disadvantaged students who desperately need continuity of instruction get it the least. Current teacher absenteeism rates seriously disrupt the consistency of the classroom environment. This problem is exacerbated by a national shortage of substitute teachers. In a recent national study, 56.3% of the nation’s school districts identified a shortage of substitute teachers as a “serious problem,” with an additional 12.9% acknowledging it as a “problem” [8].

## REVIEW OF RELATED WORKS

WiFi Attendance is a cloud-based attendance tracking system that uses office WiFi to mark employee attendance. Employees within the pre-set office WiFi range can mark their attendance through the app. They can also apply for leave and view the calendar in the app. Using WiFi can avoid problems such as punch-in failures and buddy punching that are common in biometric and usual attendance apps. It also makes live tracking possible so that you can know the real-time location of each employee on the premise. Because of live-tracking, information on working hours and productivity is readily available with managers. This information can be used for leave-management or easily integrated with payroll systems [3]. WiFi Attendance is a web-mobile-based application.

Time Clock Wizard is a cloud-based solution offering more than just attendance tracking. They have all the features related to attendance such as payroll calculation, leave management and employee scheduling. Since the service is cloud-based employees and managers can access the dashboard from any device and any place. For employee clock-in, managers can set geofencing so that clock-in is only possible in office or on-site. This prevents the incidences of proxy attendance. In fact, with the clock-points feature manager can know the exact location of clock-in using device GPS and IP address. Time Clock Wizard captures a photo of employees at the time of clock-in [3].

Virtual Attendance is a simple attendance app that works in both iOS and Android smartphones. The admin generates profiles with QR codes for each employee. This QR code is tracked using an Apple device at the office. Unlike other solutions on the list, it does not have a live location, payroll and a plethora of other services. This is a simple-to-use-app with intuitive UI. It’s great for start-ups who don’t want to bother with too many features. It’s also great for Generation X users who like a simple app that does the job without other distractions in it [3].

## PROJECT OBJECTIVE

The developers’ primary objective is to produce a mobile web application that can facilitate and automate the monitoring of the teachers’ attendance through the use of facial recognition.

Specifically, the developers aim to:

* Utilize Facial Recognition API for the facial recognition training of the human face, on several angles
* Utilize Calendar API to help the faculty stay on track with their schedule
* Utilize SMS API to send messages to the faculty that require immediate attention
* Use CCTV cameras for the implementation of the facial recognition scanners

## SCOPE AND LIMITATION OF THE STUDY

Oversee is a mobile web application that can be used both for Android and iOS platforms. Users would have to download the application first, in order for them to register an account and fully utilize the functionalities of the app itself. The faculty members can only submit remarks regarding their late or absences to the chairperson of their designated department, but not directly to the system. Faculty members cannot time-in or time-out through their mobile phones, but only through the system’s facial recognition scanner. Oversee is only exclusive for the use of the school’s faculty members. The only instrument used to implement the facial recognition scanners are CCTV cameras of the classrooms.

# CHAPTER II

## SOFTWARE REQUIREMENTS AND DESIGN SPECIFICATION

<Provide an introductory paragraph as to the content of this chapter>

## USE CASE DIAGRAM

<This illustrates the different actors of your system and the functions or capabilities that they can do to the system >

<Give a description to each diagram.>

## USE CASE NARRATIVE

<Before listing your use case narratives, include an introductory paragraph.>

<List all the use cases you identified in your Use Case Diagram. One table per functionality.>

### <Change to the name of your Use case Narrative> UC Narrative

|  |  |
| --- | --- |
| Use case: |  |
| Actors: |  |
| Purpose: |  |
| Overview: |  |
| Type: |  |
| Precondition: |  |
| Postcondition |  |
| FLOW OF EVENTS **<This should demonstrate the detailed process of the events.>** | |
| Actor Action | System Response |
|  |  |
|  |  |
| ALTERNATIVE FLOW OF EVENTS | |
| Actor Action | System Response |
|  |  |

## ACTIVITY DIAGRAM

<Before listing your activity diagrams, include an introductory paragraph.>

< Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. Activity diagram is used to show message flow from one activity to another.>

<Identify the necessary message flows in your system.>

<Explain each diagram>

## CLASS DIAGRAM

<Before listing your class diagram, include an introductory paragraph.>

<Class diagram describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.>

<Give a description to each diagram.>

## USER INTERFACE DESIGN

<Before listing your UIs, include an introductory paragraph.>

<You should add all the necessary UIs in this section. They should follow a process in your system.>

<Give a description to each diagram.>

**CHAPTER III**

**SOFTWARE DEVELOPMENT AND TESTING**

**DEVELOPMENT SOFTWARE PLATFORMS, DEVELOPMENT ENVIRONMENTS AND TOOLS**

**DEVELOPMENT AND TESTING PROCESS**

**DEVELOPMENT PROCESS**

The systematic software development process of the Probabilistic Text Classification of Course Reference using Naïve Bayes Algorithm is illustrated through the input-process-output diagram shown in Figure 3.

**TESTING PROCESS**

**CHAPTER IV**

**SUMMARY, CONCLUSION AND RECOMMENDATION**

**SUMMARY OF FINDINGS**

**CONCLUSION**

**RECOMMENDATION**

**CHAPTER V**

# BIBLIOGRAPHY

|  |  |
| --- | --- |
| [1] | Wikipedia, "Attendance," 6 January 2020. [Online]. Available: https://en.wikipedia.org/wiki/Attendance. [Accessed 30 January 2020]. |
| [2] | M. Kojic, "Attendance tracking – how to track and check attendance," 20 May 2019. [Online]. Available: https://clockify.me/blog/business/tracking-checking-attendance/. [Accessed 14 February 2020]. |
| [3] | redbytes, "Top 15 employee attendance tracking apps in 2019," 24 July 2018. [Online]. Available: https://www.redbytes.in/employee-attendance-tracking-apps/. [Accessed 30 January 2020]. |
| [4] | A. Works, "New Report: Importance of Teacher Attendance," 4 June 2014. [Online]. Available: Investing in a system that keeps effective teachers in the classroom should be a priority for school leaders and policymakers. A key part of that effort is creating a school climate in which consistent teacher attendance is the norm. That said, teachers h. [Accessed 31 January 2020]. |
| [5] | NCTQ, "Roll call: The importance of teacher attendance," June 2014. [Online]. Available: https://www.nctq.org/dmsView/RollCall\_TeacherAttendance. [Accessed 31 January 2020]. |
| [6] | E. &. H. R. Duflo, "Monitoring works: Getting teachers to come to school," 2005. [Online]. Available: https://ies.ed.gov/ncee/edlabs/regions/west/Ask/Details/39. [Accessed 31 January 2020]. |
| [7] | U. C. P. Schools, "Attendance: Teaching Staff Member," 28 May 2015. [Online]. Available: https://www.ucboe.us/apps/pages/pp/tchstf/attend\_tchr. [Accessed 31 January 2020]. |
| [8] | G. G. Smith, "Increasing teacher attendance," August 2014. [Online]. Available: http://stedi.org/wp-content/uploads/2014/08/IncreasingTeacherAttendance.pdf. [Accessed 31 January 2020]. |