ONLINE CLASSROOM ATTENDANCE SYSTEM USING FACIAL RECOGNITION

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JUDUL: ONLINE CLASSROOM ATTENDANCE SYSTEM USING FACIAL RECOGNITION

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ONLINE CLASSROOM ATTENDANCE SYSTEM USING FACIAL RECOGNITION

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Computer Networking) with Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

DECLARATION

I hereby declare that this project report entitled

ONLINE CLASSROOM ATTENDANCE SYSTEM USING FACIAL RECOGNITION

is written by me and is my own effort and that no part has been plagiarized

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STUDENT : Wong Zhi Shing Date : 02 SEPTEMBER 2021

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I hereby declare that I have read this project report and found

this project report is sufficient in term of the scope and quality for the award of

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SUPERVISOR : _____ Date : 31/8/2021

(ASSOC PROF TS. DR ROBIAH YUSOF)

DEDICATION

I would like to dedicate this thesis to my beloved parents who have always give support and motivation to me unconditionally, my friends who give courage and help to me whenever I stumble into problem and lastly the highest appreciation goes to my supervisor, Assoc Prof Ts. Dr Robiah Yusof for her patience and guidance in this thesis.

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ABSTRACT

Online classroom attendance system has been implemented in many institutions and places. It helps to enhance the accessibility and increase the efficiency of attendance registration process. Due to the pandemic Covid-19 outbreak, online attendance system are now adopted by every institution as all classes are switched to virtual mode. In Universiti Teknikal Malaysia Melaka, most of the classroom attendance are taken using google form or virtual platform participants. The question raised for virtual attendance is that student identity could not be verified as registration using google form can be easily fake by other person. Legitimate of student attendance is important because study found that there is a positive correlation between attendance of students and their performance in examination and coursework. Another problem of the current attendance registration method is that it does not provide attendance registration record to students. In another word, student register their attendance but they are unable to verify whether their attendance are successfully recorded in the system. This project aim to develop an online classroom attendance system that has capability to verify virtual identity of student and able to provide accurate classroom attendance record to student. Out of many identity verification method, only fingerprint and facial recognition verification are viable for virtual classes as it able to verify a person live, where student must present at the moment of verification. The proposed solution is a web-based attendance system that implemented facial recognition to provide virtual identity verification for attendance registration. This solution opted for a cheaper implementation cost compared to fingerprint verification as it only required digital camera to capture facial image of the students. Students, lecturer and management team of institution would benefit from using this system as it is has high accessibility, convenient and able to verify virtual identity of students.

ABSTRAK

Sistem Kehadiran Kelas dalam talian telah digunakan di pelbagai institusi. Ia membantu meningkatkan kebolehcapaian dan kecekapan dalam proses pengambilan kehadiran. Oleh kerana pendamik Covid-19 berleluasa, kebanyakkan institusi telah mengaplikasikan sistem kehadiran kelas dalam talian kerana semua kelas telah beralih ke mod maya. Di Univerisiti Teknikal Malaysia Melaka, kehadiran kelas maya kebanyakkan diambil dengan mengunakan borang google atau pelantar maya yang lain. Persoalan pertama untuk kehadiran kelas maya ialah pengesahan identiti pelajar tidak dapat dilaksanakan dan kehadiran pelajar dapat dipalsukan oleh orang lain. Persoalan seterusnya ialah cara pengambilan kehadiran kelas maya semasa tidak menyediakan rekod kehadiran kelas kepada pelajar untuk tujuan semak semula. Projek ini bertujuan untuk membangunkan sistem kehadiran kelas dalam talian yang mempunyai kemampuan untuk mengesahkan identiti maya pelajar dan memberikan rekod kehadiran kelas yang tepat kepada pelajar. Daripada pelbagai kaedah pengesahan identiti, hanya pengesahan mengunakan cap jari dan pengesahan mengunakan pengecaman wajah sesuai untuk diaplikasikan dalam sistem kehadiran kelas dalam talian kerana kaedah tersebut mampu mengesahkan identiti seseorang secara langsung, iaitu pelajar perlu hadir pada masa mengambil kehadiran kelas maya. Penyelesaian yang dikemukakan dalam projek ini ialah sistem kehadiran kelas dalam talian berasaskan laman web bersepadu dengan API pengecaman wajah untuk memberikan fungsi pengesahan identiti maya dalam pengambilan kehadiran kelas. Solusi ini dipilih atas kos pelaksanaan yang lebih murah berbanding dengan pengesahan mengunakan cap jari kerana solusi ini hanya memerlukan kamera digital untuk menangkap wajah pelajar. Sistem ini dapat memanfaatkan para pelajar, pensyarah dan pasukan pengurusan institusi kerana sistem ini mempunyai kebolehcapaian yang tinggi, senang digunakan dan berkebolehan untuk mengesahkan identiti maya pelajar.

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LIST OF ABBREVIATIONS

FYP	**-**	**Final Year Project**

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Class Attendance is a proof for student participation in a classroom. This is to make sure that student is present to the class before taking examination. The requirement for attendance in Universiti Teknikal Malaysia Melaka (UTeM) is student must present for at least 80% of the class time of a particular course throughout a semester. A study found that there is a positive correlation between attendance of students and their performance in examination and coursework. Based on their finding, the general attendance data in 2013/2014 and 2014/2015 for module PHA312, the average attendance across this two years are approximately 80 percent. Student module feedback was excellent across both years. Overall satisfaction for these students are above 90 percent. There is a need for attendance monitoring policies within degree students, especially in most courses are adopting the internet based teaching technologies as the new teaching method. (Irwin et al, 2018).

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However, due to pandemic Covid-19 outbreak in our country, all of the classes are switched to virtual mode where student participation in virtual classroom could not be verified as most of the classroom attendance are taken using google form or virtual platform participants. This would cause difficulties in verifying student identity as other student might filling up the form for them and manually checking every class attendance would also burden lecturer and this might lead to human error.

In order to overcome this issue, this project intended to implement a new approach of taking classroom attendance by using online classroom attendance system based on facial recognition. By using this approach, the process of taking

classroom attendance with verification would be more efficient and lecturer can have less worried about attendance of class and focus more in teaching students.

1.2 Project Background

Attendance culture has long been used in worldwide regardless of what field it is apply into. In education field, attendance system is apply for all stages whether it is in primary school, secondary school or universities. Before the pandemic of Covid-19 happen, most class around the world are using face to face method where present of student in classes can be easily verified. However, for current pandemic situation where most classes are held in virtual mode, student participation in class are unable to be verify. This issue will cause a sizable impact to student participation in class.

The most significant problem is complex and inefficient approach for taking attendance in virtual classroom. Class attendance recording are common practice in most educational institution. Sign-in-sheet or roll-call are known as the conventional practices for student attendance recording inside a classroom. Nevertheless, there are few problems for this convolution practices like labour intensiveness, distraction and time wasting, especially for institution which enforce compulsory attendance policy. (Budi, 2018) Various institution are facing problems in maintenance of student attendance. The method of taking attendance varies from one another. Some are using attendance sheet or some using biometric methods. These method are time consuming. (Varadharajan, 2020)

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Study shows that attendance management is important for most organization particularly in educational institution. It can control and manage any organization to achieve success by monitoring attendance of people within the organization such as students to improve their performance. Future improvement can be made are to takes the attendance by other methods like face recognition, fingerprint biometrics technique, NFC and RFID technologies. (Jacksi, 2018)

In addition, student identity in virtual classroom are unable to be authenticate automatically. During the class session in virtual mode, verification of student identity are often done in manually which lecturer will call up each student name to ask for their respond. This process is time consuming and sometimes it will interrupt the