**ATTENDANCE MONITORING USING FACE RECOGNITION AND BODY TEMPERATURE DETECTION LOG**

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**CHAPTER I**

**INTRODUCTION**

Thermal and attendance system through image processing is to identify the student entering the school campuses. Most educational institution capture attendance data of their faculties and students manually. It is possible that the attendance is marked by their friends. Leading to false and inaccurate attendance data. Students may leave before time, bunking their classes and it would become quite difficult to keep track with manual recording. The process of the students can be determined by capturing their their face though the use of web cam. Since nowadays, the life of a human being should be easier and simplier. So, we develop this concept of machine learning in Face-recognition for automatic attendance system. We perform the face recognition and face detection detection algorithms to secure and record every students if they are attending their classes. Automatic thermal and attendance system is a process of automatically detect the temperature and record the presence or the absence of the students I the classroom by using face recognition technology.

Background of the Study

Face recognition is crucial in daily life in order to identify family, friends or someone we are familiar with. We might not perceive that several steps have actually taken in order to identify human faces. Human intelligence allows us to receive information and interpret the information in the recognition process. We receive information through the image projected into our eyes, by specifically retina in the form of light. Light is a form of electromagnetic waves which are radiated from a source onto an object and projected to human vision. The analyzed information will be compared to other representations of objects or face that exist in our memory to recognize. In fact, it is a hard challenge 2 to build an automated system to have the same capability as a human to recognize faces.

However, we need large memory to recognize different faces, for example, in the Universities, there are a lot of students with different race and gender, it is impossible to remember every face of the individual without making mistakes. In order to overcome human limitations, computers with almost limitless memory, high processing speed and power are used in face recognition systems. The human face is a unique representation of individual identity. Thus, face recognition is defined as a biometric method in which identification of an individual is performed by comparing real-time capture image with stored images in the database of that person (Margaret Rouse, 2012).

Nowadays, face recognition system is prevalent due to its simplicity and awesome performance.

**Problem**

* Why many of teachers are encountered/face a lot of trouble by checking a attendance?
* What if the person entered the school campus did not register?
* How this study solve the problem of teachers, students and staffs in the time of pandemic?
* What are the possible ways that system can monitor?

**Problem Analysis**

* This system will answer the teachers and individual problem first is checking an attendance.
* We will conduct guest ID or QR Code for those who are didn’t register.
* It will make easy for them to make body temperature and checking attendance automatically in our new normal education.
* The possible ways that system can monitor are the attendance, security, safety, in and out of the students, teachers and staff.

**Problem Statement**

Traditional student attendance marking technique is often facing a lot of trouble. The face recognition student attendance system emphasizes its simplicity by eliminating classical student attendance marking technique such as calling student names or checking respective identification cards. There are not only disturbing the teaching process but also causes distraction for students during exam sessions. Apart from calling names, attendance sheet is passed around the classroom during the lecture sessions. The lecture class especially the class with a large number of students might find it difficult to have the attendance sheet being passed around the class. Thus, face recognition student attendance system is proposed in order to replace the manual signing of the presence of students which are burdensome and causes students get distracted in order to sign for their attendance. Furthermore, the face recognition based automated student attendance system able to overcome the problem of fraudulent approach and lecturers does not have to count the number of students several times to ensure the presence of the students.

Hence, there is a need to develop a real time operating student attendance system which means the identification process must be done within defined time constraints to prevent omission.

**General Objectives**

This study aims to design, develop Attendance Monitoring using Face Recognition with Body Temperature Detection Log.

Specifically this study aim to design a program module to:

* Detect the face segment through camera
* Maintain security of each individual
* Detect the body temperature of the students
* Record the attendance of every students

**Conceptual Framework**

**Output**

Attendance System with Face Recognition and Body Temperature Log

**Process**

* Registering Students Information
* Recording the Attendance of the Students
* Detecting Body Temperature of the person
* Identifying Students Image

**Input**

Student Information

* Name
* Course and Section
* Subjects
* Date and Time
* Image Recognition
* Temperature

Thermal Sensor

Evaluation: ISO 25010 Series of 2011

Definition of Terms

Raspberry Pi 4 - in its cheapest form it doesn't have a case, and is simply a credit-card sized electronic board -- of the type you might find inside a PC or laptop, but much smaller.(June 24, 2019)

Camera Module -is a portable light weight camera that supports Raspberry Pi. It communicates with Pi using the MIPI camera serial interface protocol. It is normally used in image processing, machine learning or in surveillance projects.(December 9,2018)

Python - is a high-level programming language designed to be easy to read and simple to implement. It is open source, which mean**s** it is free to use, even for commercial applications. Python is considered a scripting language, like Ruby or Perl and is often used for creating Web applications and dynamic Web content. (June 15, 2010)

Sensor - a device that measures physical input from its environment and converts it into data that can be interpreted by either a human or a machine.( Jost, D. June 10,2019).

OpenCV -  (Open Source Computer Vision Library) is a library of programming functions mainly aimed at real-time computer vision, and a [library of programming functions](https://en.wikipedia.org/wiki/Library_(computing)" \o "Library (computing)) mainly aimed at real-time [computer vision](https://en.wikipedia.org/wiki/Computer_vision" \o "Computer vision). ([Garage](https://en.wikipedia.org/wiki/Willow_Garage" \o "Willow Garage), W. 2011)

Scope and Limitation

Attendance System with Face Recognition and Body Temperature Detection Log is a hardware that is designed and develop to record the attendance of students automatically detect the body temperature. It is create to monitor each individual entering the school campuses. Its purpose accurate information whether a students actually attended his/her classes.

Significance of the Study

The result of hardware may benefit students and teachers.

Students: Attendance System with Face Recognition and Body Temperature Detection Log can help them to know their schedule of classes.

Teachers: It would be easier for them in checking the attendance of every students.

**Chapter II**

Review of Related Literature

Face Recognition- based on lecture attendance system the study by Daljit, K. R 2018, stated that this system uses the face recognition approach for the automatic attendance of students in the classroom environment without students intervention. Student context such as presence, seat position, status, and comprehension are mentioned. At the same time face images reflect a lot about this context information.

Face Recognition based attendance system study by Nandhini R, (2019) nowadays attendance is considered as an important factor for both the student as will as the teacher of an educational organization. With the advancement of the deep learning technology the machine automatically detects the attendance of the students and maintains a records of those collected data.

Face Recognition- based smart attendance system using IOT the study Sakshi Patel, May 2018, every organization requires an attendance system to maintain record of presence of students and employees. They have their own method to do the same, some do manually and some used automated attendance system.

Study of Implementing Automated System Using Face Recognition Technique the study by Nirmalya Kar, July 2012 stated that face recognition is gradually evolving to a universal biometric solution since it require virtually zero effort from the user end while compared with other biometric options.

Face Recognition Attendance System With GSM Notification the study of Kinnidy Okokpujie(November 2017) biometric has come a long way since the 19th century and is certainly a constantly developing area of technology. The applications of bio metrics are vast and new application are emerging.

Face Recognition- based attendance system the study of Tetsuo Shoji January 2005, he proposed a method that take the attendance using face recognition based on continuous observation. His purpose is to obtain the attendance, positions and images of students face, which are useful information in the classroom lecture.

An improved face recognition algorithm and its application and attendance management system the study of Serign Bah, December 2019- stated that lot of achievements have been made in devising facial recognition algorithms and systems, but to reach human level accuracy of facial recognition, some major issues associated with these algorithms/systems should be greatly mitigated or addressed.

Smart Attendance System using face recognition the study of Dr. Sabeenian, R.S (May 2020) , stated that the main use of face recognition for the direction of attendance marking is the quick and smartest way of attendance management system. Face recognition is more proper and faster technique among other approach and scale down chance of proxy attendance.

Real-Time Face Recognition for Attendance Monitoring System the study of Shohel Sayeed (January 2017)- stated that the interest and time frame of studies in this field is indicative of its value and complexity, and has be come an increasingly important form of biometric authentication.

Chapter III

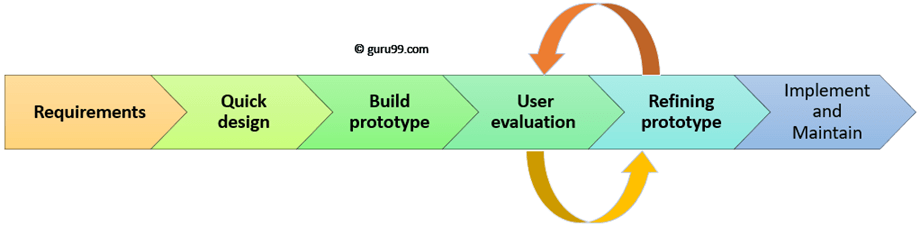
Methodology

Chapter III covers thr project description, project development,requirement analysis , project evaluation, data gathering instrument, data gathering procedure, and statistical data analysis.

Project Description

The whole of the project description and development of Attendance Monitoring Using Face Recognition and Body Temperature Detection Log entails the designing and the diagramming that could be used to understand the whole study. This techniques is repetitive, complex work and leads to error as a few students regularly sign for there absent students or telling proxy attendances of the absent student. This method additionally makes it more complex to track all the student’s attendance and difficult to monitoring the individual student attendance in a big classroom atmosphere.

The Attendance Monitoring Using Face Recognition and Body Temperature Detection Log is design to monitor every students , teachers and staff of the whole ISCOF, the function is to monitor and check the attendance of every student by recording there ins and outs of the students and also the teachers. Attendance Monitoring Using Face Recognition and Body Temperature Detection Log could be a big help to the teachers to check to attendance manually so in this teachers cannot make a mistake for checking the attendance of there students.

Project Development

Requirements Gathering

In this phase researchers gather the specific requirements that can be used to develop the attendance using face recognition and body temperature. The researchers gather information's to formulate as specific reason why attendance has been decided to be build by conducting an interview sames students of ISCOF and gather information about the problem that they encounter regarding the checking of attendances and the ins and outs of every students and staff of the school.

Quick Design

In this phase of design process, the researchers create and design on how Attendance Monitoring Using Face Recognition and Body Temperature Detection Log would look like by reviewing the appropriate figures and designing in order to make it stable easy to operate.

Build Prototype

In this phase, the researchers will be going to develop the Attendance Monitoring Using Face Recognition and Body Temperature Detection Log based on designs that has been gathered. This includes something fixing, and testing.

User Evaluation

In this phase, the researcher will be conducting a survey to a specific group of students regarding to initial prototype Attendance Monitoring Using Face Recognition and Body Temperature Detection Log. The evaluation will be the basis for the researchers in where the device needs to be revise and mush be change for the satisfaction of the users.

Refining Prototype

In this phase the researcher will be fixing bug and adding features that are necessary for the Attendance Monitoring Using Face Recognition and Body Temperature Detection Log by basing to the evaluation conducted. This process mush be repeated a long with the user evaluation until the prototype would come up into it’s final design and function.

Implement and Maintain

In this phase, the researcher will implement Attendance Monitoring Using Face Recognition and Body Temperature Detection Log at Iloilo State College of Fisheries (ISCOF) Poblacion Barotac Nuevo along with the fixing of upcoming bugs, error, and some malfunction that might occur while implementing the system.

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