

CHAPTER 1

INTRODUCTION

1.1 Project Background

The attendance system is very important to maintain attendance. Each company has its own method of conducting attendance either manually, similar to the old paper or file-based approach, and only a few offices and institutions have adopted new methods for automatic attendance.

As an example from one company, the system implemented is attendance using an ID card. The ID Card doubles as identification and as a tool for taking attendance. The way to take attendance with an ID Card is to position the ID Card parallel to the attendance machine (ID Card detection tool). Attendance machines are placed at the security post, namely 2 machines for attendance from work and 2 machines for attendance after work. The position of the attendance machine for coming to work is different from the attendance machine for coming home from work.

Attendance with an ID Card has several disadvantages, including a lot of additional work caused when employees forget to bring their ID Card. When an employee forgets to bring an ID card, the employee must write down data about himself including name, employee identification number, department, time of entry (filling in is done by looking at the actual time when the employee is absent both when coming to work and returning from work). Books to record attendance data for employees who do not carry ID cards have been provided by security officers. Security officers will supervise the filling in of the data so that the data written down is accurate. This becomes less effective because attendance using an ID card takes up a lot of time, especially when employees forget to bring their ID cards and have to write down their identity data.

Attendance checks will be carried out manually either from employees who are present, or attendance checkers who will check attendance based on at least the person's physical presence in a place, for example the work space. Of course, this method sounds inefficient in terms of time consumption and work operations in

conditions of large population. There is a proposed idea to overcome the complexity of conducting attendance in certain circumstances by using an intelligent biometric attendance system. One example of a biometric attendance system is a facial recognition based attendance system. This type of biometric system will check attendance automatically by scanning the employee's face using artificial intelligence. Biometric technology that uses the unique and distinct characteristics of a person's face to identify them. Then the identification data will be saved into the database as a sign of the user's attendance of several employees.

Facial image recognition, which is one of the concentrations in the field of computer vision, is one of the biometric technologies that has been widely applied in security systems. In general, in its implementation, facial image recognition is carried out using an Android webcam to capture a person's facial image. It works by analyzing facial patterns and shapes to create a unique image that forms facial data, which can be used to identify users. then the facial image is compared with the previous facial image that has been saved. After that, the facial capture is saved into a database that can be managed by the admin as attendance history data.

1.2 Problem Statement

1. As of right now, employee grievances are handled manually, taking time and energy to resolve. The face recognition.
2. Manually creating a attendance report can be a time-consuming and laborious task.
3. Attendance report as of right now is stored in a physical format, which requires a significant and limited time period for processing.
4. Sometimes, Face Recognition has an issue/bug to detect the image so use alternatives.

1.3 Project Objectives

1. To develop the face recognition systems to record on employees attendance.
2. To generic report on the attendance
3. To provide the backups using fingerprint if the face recognition fail to detect the image.

1.4 System Scope

For System Scope, face recognition process begins with login/register system and then face detection, namely the process of detecting and finding the location of a human face in an image or video. Classification of a person's gender is based only on the front view image. This can be determined by hair, nose, eyes, mouth and other traits with a relatively high degree of accuracy. The background of the face image is not too complicated and there is only one face. Furthermore, each image is assumed to have the same size, quality and image resolution which is assumed to be sufficient. The lighting is uniform and the input image is a full color image and there are no restrictions on clothing, glasses, makeup, hairstyle, beard, etc. worn.

Once the face is identified, it then extracts important features from the face. These features create a unique facial image that can be used for further analysis. After the facial image is created, it is compared with the image in the database. Finally, after facial recognition determines whether the similarity matches the previous facial image data, it is then recorded in a database determined from the similarity of the facial image, then generates identity data from the appropriate database in adjusting the facial image.

For User scope, face recognition process begins register with email, and then system give the password in registered email. User then can access face Recognition and face scan, system will analysis detected or not. If yes, will be verified. If not will be back scanning face again.

Face recognition system will showing id and then user can save attendance. After saving, Record attendance will be verified and saving in to database. If Face recognition can't be verified or registered can use fingerprint scanner. Fingerprint scanner makes the user to press thumb into mobile screen and then system will show the id and date to save attendance into database.

1.5 Significance/Contribution

For attendance management purposes, this project can provide many benefits and significant advantages. Some of the benefits are as follows:

1. **Efficiency and Productivity:** Facial recognition technology will significantly speed up attendance recording and improve product efficiency and quality.
2. **Accuracy:** Facial recognition is highly accurate, reducing human error in recording attendance. This reduces attendance cheating.
3. **Increased Security:** Facial recognition can also be used to ensure that only people with the necessary authority can access certain areas. This is very important for protecting physical and sensitive information.
4. **Real-time Reporting:** This system can provide real-time attendance reports, which helps management make decisions with the latest data.
5. **Flexible Customization:** This project can be adapted to suit any scale, from small companies to large institutions. This allows facial recognition technology to be used in a variety of situations.
6. **Compliance and Track Records:** This project helps organizations comply with laws and regulations that require accurate attendance records. A digital track record can also serve as proof of eligibility if necessary.
7. **Improved Data Quality:** Accurate and precise attendance records can help organizations organize and optimize resources, such as work schedules

1.6 Chapter Summary

1. Chapter 1 Introduction

This chapter discusses the objectives and scope of the Face of Recognition for Attendance Purposes project and an introduction to the implementation of the face detection system.

2. Chapter 2 Literature Review

This chapter contains a further introduction to face detection, facial image features, extraction and gender estimation. Several techniques will be briefly reviewed. The main differences between male and female facial features will be explained. Finally some important image processing techniques will be discussed.

3. Chapter 3 Methodology

Describes the techniques and steps taken to implement a face detection system on the Face of Recognition for Attendance Purposes project.

4. Chapter 4 Research Results

The final results of this project are presented and discussed in this chapter. Some applied outcome analysis is also included.

5. Chapter 5 Conclusion

This chapter contains the conclusions for this project. It also describes existing problems that have arisen and suggestions for improvements and future work