

Implementation of a Meeting Sign in Method Through Image Recognition

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Abstract

This system utilizes image recognition technology to study the problems of other people's check-in in the current check-in mode, poor data feedback, and low efficiency of manual management. A complete set of mobile conference sign-based based on image recognition technology is designed and implemented. The management system can greatly improve the efficiency of the conference check-in, save the time of the conference check-in, has strong usability and operability, and greatly saves the conference time occupied by the conference sign-on, and has high efficiency and practicability.

Keywords

Image Recognition; Feature Face; Conference Sign-in System.

1. Introduction

Meetings are important places for employees to acquire knowledge, enrich their thinking, cultivate character, and establish correct values. As employees, they should arrive at the meeting place on time and attend the meeting. Workers signing in to work are an important way for the organization to build a good work style and maintain normal working order. It plays an important role in enhancing the concept of employee discipline. However, the current number of organs is large, the meeting place is liquid, and the staff does not have a fixed meeting place and seat, which makes the sign-in management have many problems such as large workload, low manual management efficiency, poor real-time performance, and difficulty in statistics and reuse. The imperfect sign-in mechanism created opportunities for employees to absent, which seriously violated the concept of the meeting. At the same time, with the development of society, more and more industries need more and more efficient sign-in management mechanisms. Manual sign-in in existing sign-in management methods is achieved through verbal naming and manual registration. Although this method is flexible, it cannot eliminate the items that others sign on, and requires special sign-in personnel to record in real time, wasting labor costs. Similarly, for the check-in clock, the check-in management is realized by means of the throughput card. Although no special person is required for real-time supervision, the speed is slow and the result of the check-in cannot be reflected in real time, which cannot meet the requirement that a large number of employees in the organization complete the sign-in in a short time and immediately summarize the results. The sign-on based on fingerprint identification technology, although the entry of the sign-off is eliminated, but it is unsanitary and the finger fingerprint is damaged, the fingerprint punching method is not correct, etc., and cannot be accurately and conveniently identified. Compared with the above existing check-in methods, the conference sign-on based on image recognition technology has been prominently highlighted, and has many advantages such as high efficiency, strong real-time performance, high accuracy, convenient and fast, and easy to be accepted by users. In summary, this paper designs a check-in system to solve the problems existing in the current institution sign-in mechanism. The system is based on image recognition technology.

Employees do not need to carry any equipment to complete the check-in. They can meet the accurate check of the employee's sign-in situation in a short period of time, effectively eliminate the signing of others' signatures and improve the sign-in results. Accuracy, the efficiency and reliability of sign-in work is greatly improved.

2. Design and Implementation of Sign-on System based on Image Recognition Conference

2.1. Overall System Design

The system is divided into two modules: user check-in module and administrator information management module. The user sign-in interface design has a corresponding graphical interface program, and the sign-in can be completed in different ways according to different function buttons, and the result is entered into the database to facilitate administrator management. Administrator information management, database data management through Navicat tools, as well as data statistics and modifications. The specific working principle is shown in Figure 1.

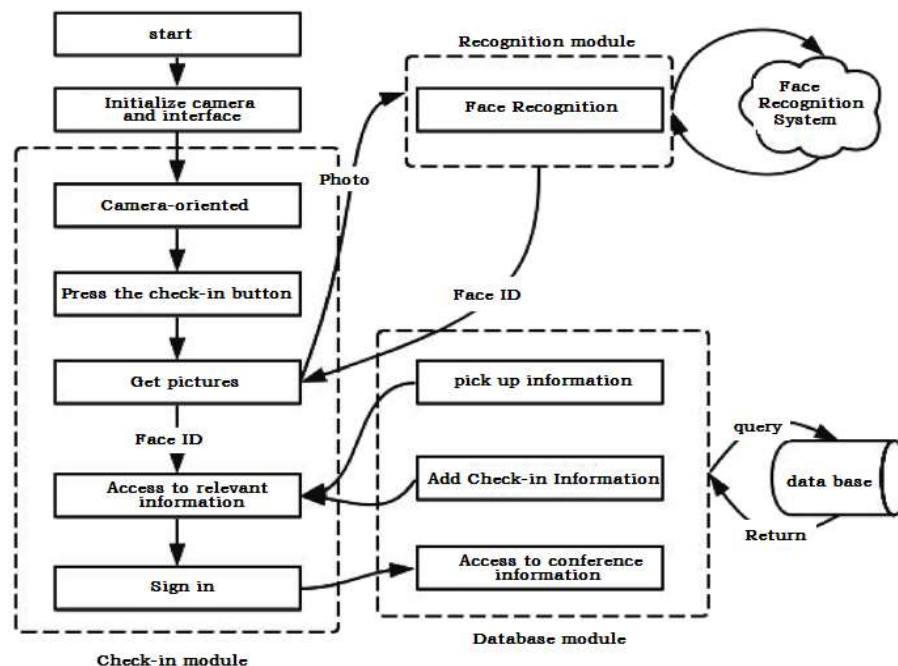


Figure 1. The specific working principle

2.2. Implementation of the Function of Employee Sign-in Module

Establish the employee table, department table, and team table in the database, enter the name, department, team information, meeting table, and content table of all employees who need to sign in, and enter the meeting information in the meeting schedule. The sign-in form is used to save the sign-in result. When the employee signs in, facing the camera, after clicking the check-in button, the software transmits the image captured by the camera from the video stream to the image recognition module, and the image recognition system analyzes the face and obtains the face id, which is performed with the employee information already entered in the database. Contrast match. If the identification code information is successfully matched, the related information read from the database is displayed in the right column, wherein the name and the serial number are the information read in the database after the face id is matched, and the conference is It is data obtained by matching according to the current week and current time. According to the results of the comparison, the following check-in results appear:

(1) If the face match is successful and has not been checked in, “success” is displayed to indicate that the check-in is successful. The check-in information will be saved in the check-in table of the database.

(2) If the student has already signed in and completed the check-in, it will display “failed, the sign-in failure may be that the employee has signed in”, indicating that the sign-in information of the staff member has been entered in the database, so it cannot be checked in again.

(3) If the employee does not enter the information in the database in advance, when signing in, the signing result interface will appear “failed, the employee is not found”, indicating that the person is not signed.

(4) In addition to obtaining face images from the camera, the system also supports selecting photos from the local gallery for sign-in. If you click to select the local image to check in, the selection interface for the local file appears, and the selection has been entered into the database. The face picture is tested. Similarly, the result of selecting a local picture check-in is the same as using the camera check-in module, and there are also two results of check-in success and check-in failure.

2.3. Implementation of Administrator Information Management Function

The administrator uses the Navicat database management tool to manage the check-in data. The employee's check-in information is stored in the check-in form. The administrator can view, add, delete, and modify employee information, conference information, and leadership information through the database. The system keeps the information of each check-in for a long time, so that the leader can carry out the registration and summary work at the end of the month to avoid disputes in the later period.

3. Algorithm Design of Image Recognition Software

3.1. Principles of Image Recognition Technology

Social work is an urgent need for fast and effective identification and verification. Image recognition technology has made a breakthrough development and has been widely used in various aspects. Human face is inherent in biological characteristics and has a high degree of non-Rigidity, uniqueness and non-replicability provide a good basis for identity authentication. Compared with other biometrics, fingerprint identification has non-mandatory and non-contact characteristics. Workers do not need to directly contact the device, no specialization is required. In cooperation, the face image can be obtained in an unconscious state. The image recognition technology judges the input face static image or the face image detected in the video stream. If the face is detected, the image is compared with the image in the database to achieve the purpose of identification and identification. Extracting facial features is the most important module in the field of image recognition. The basic process is shown in Figure 2.

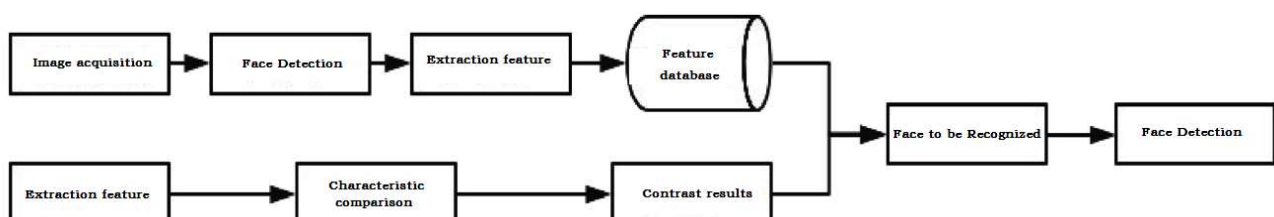


Figure 2. The basic process

Image recognition technology mainly includes three modules.

(1) Face Detection Module: The main function is to detect and process the face of a picture in reality, and locate the image area and position where the face is located in a picture.

(2) Facial feature point positioning module: The main function is to extract and locate the facial feature points on the basis of recognizing the facial area, in order to solve the adverse effects caused by factors such as posture, expression, illumination and occlusion in the real scene, The module obtains the location of facial feature points on high resolution images by cascading multiple self-compiled code networks.

(3) Face feature extraction and comparison module: Based on the calculation of the first two modules, the feature values of the face feature points in different images are extracted and compared, and finally judged by the judgment process, and given in different images. The similarity of the face size, the higher the similarity, the greater the possibility of being the same person.

3.2. Algorithm Implementation of the System

The system adopts Java language as a whole. The language is powerful, easy to use, high in cross-platform, flexible in calling, and highly portable. As a representative of static object-oriented programming language, it realizes object-oriented theory very well. The database is designed using the MySQL database to create employee tables, leadership tables, check-in tables, meeting tables, and professional watches. A flag information is set in the employee table, and each employee corresponds to one, indicating whether the conference corresponding to the current time has been checked in. The identifier is zeroed by the server 10 minutes before the end of each lesson, and employees are prohibited from signing in for 10 minutes.

The overall algorithm is divided into 3 steps:

(1) The feature code collected by the employee's photo is stored in the database in advance.

(2) Firstly call the Search API function provided by the face++ platform for image recognition. According to the network address of the provided image, the local format or the base64 encoding of the image, call different API functions to get different return values and display them in JSON format.

(3) At the time of sign-in, according to the current camera to obtain photos and the calculated return value, traverse comparison is performed from the collection of pictures stored in the database to find the closest identification code, and finally the employee information corresponding to the found identification code is displayed. On the check-in interface.

4. Conclusion

This paper introduces the principle and software design of conference sign-in system based on image recognition. The software runs on pc and compatible machine. With this system, the mobile conference can be quickly checked in, which solves the large workload and manual work in the current conference sign-in process. Management efficiency is low, real-time performance is poor, data is difficult to count and reuse, and many other issues, which greatly saves meeting time and improves meeting efficiency. At the same time, the current image recognition algorithm is relatively mature, which can ensure the system has high reliability. After repeated experiments and debugging, the system can accurately realize the sign-in function of mobile conferences. The conference sign-in system based on image recognition will be widely used in daily faculty and staff activities.

References

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