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EFFECTIVE ATTENDANCE MARKINGUSING FACE RECOGNITION & RFID TAGS

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Abstract - *Attendance System is pretty Old Technology to call the names of the Students Manually. It takes more time to call each student one by one. Also they might miss out calling some students name. It will not be effective. Due to this student can get less attendance percentage in their report card. so our aim is to make Attendance automatic. Instead of calling out the names, rather using RFID system to monitor the student attendance. To overcome this problem we propose a Effective attendance marking using RFID. RFID tag is verified then Camera is initialed. Face Recognition and Matching can be verified and is processed using Mat lab. Attendance system is made automatic. After verifying if it matches then it mark as present such that it will be verifying for all the students .After the Time limit it will put absent for student those not come to college and messages will be sent to their parents. As a result, the proposed system achieves the more effective for marking attendance.*

***Key Words*: RFID tags, face recognition**

1.INTRODUCTION

Face recognition is a well developed technology; it had been applied to person authentication. Challenges in face recognition include illumination, pose, facial expression, aging, hair and glasses. Radio-frequency identification (RFID) tags contain electronically stored information has widely used for access control system. However, traditional RFID-based access control system identifies people only by RFID card. Anyone presents a registered RFID card will pass the authentication even he/she is not the card holder. To avoid this problem, face recognition was involved in the RFID-based access control system. The proposed access control system is implemented and performed in a multinational enterprise. The purpose of this system is used to inspect who has the permission to enter the factory for work. All the operations will be recorded with time. HR manager could check the records from the database. Experimental results show that the proposed access control system has strong ability to reject the person presents others'

RFID card. First, employees are required to present his/her RFID card. Only the person presents a registered RFID card will undergo the face recognition. In face recognition, a face detection technology is applied to extract faces. The normalization process is used to adjust the size and intensity of the extracted faces. The SURF algorithm is then performed to align the extracted and registered faces. Finally, the CW-SSIM is adopted to calculate the similarity of the extracted and registered faces.

2. Face detection

Robust Real-Time Face Detection is a powerful face detection technology with high accuracy. The algorithm consists of three major methods includes integral image, AdaBoost, and cascade detection. In this paper, the Robust Real-Time Face Detection is used to detect faces. *B. Face Extraction*- Since the background and hair significantly affect recognition, background and hairstyle of detected faces are removed. Only the "inner face" is used to identify the card holder in the proposed method.

2 .1 Registration

In this module we are going to create an User application by which the User is allowed to access the data from the Server of the Cloud Service Provider. Here first the User want to

create an account and then only they are allowed to access the Network. Once the User create an account, they are to login into their account and request the Job from the Cloud Service Provider. Based on the User's request, the Cloud Service Provider will process the User requested Job and respond to them. All the User details will be stored in the Database of the Cloud Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Cloud Server through Network Coding using the programming Languages like Java/ .Net. By sending the request to Cloud Server Provider, the User can access the requested data if they authenticated by the Cloud Service Provider. Register to the RFID Card and face recognization.

2.2 Class Attendance

In this module we will create attendance system , In colleges attendance system is pretty old technology to call the names manually. Nowadays the technology improved day by day in other applications. We never consider about the simple application such as student attendance system. In this paper we are going to implement such a thing like student attendance system at the same time we are integrating student behavior monitoring system during the class session.

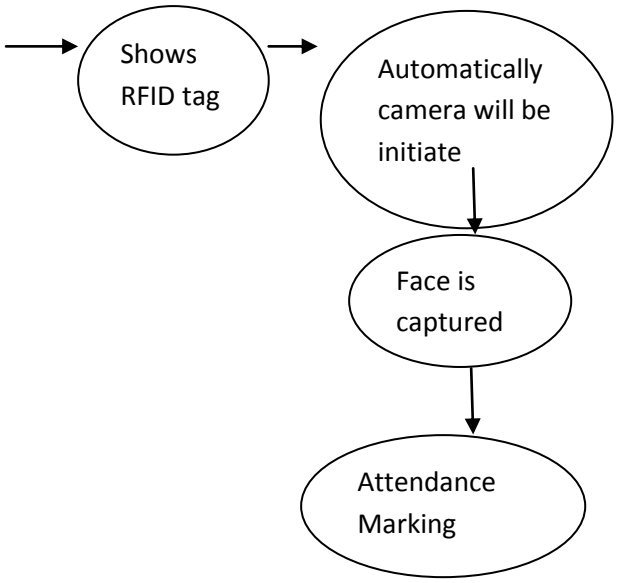

Fig: 2.1: Data Flow Diagram

2.3 Face Recognization

In this module a new student tracking technology using ultrasonic sensor and RFID technology. The system is being developed for economic with respect to School and College point of view. RFID tag based Attendance System of every user is implemented with cheap cost. Two types of implementation are integrated here. First one is student will be showing RFID tag in front of the Door, which initiates the camera and Photo is Captured.

2.4 Misbehaviour

In this module used to analyze the misbehavior student. During the class hours, Ultrasonic sensor which is placed in the above of the entrance detects any student movement. If someone leaves in between the class hours or someone comes late to the class, Ultrasonic is triggered and automatically camera is initiated which captures the image and sends it to the server. The Department Head or other department professors can view the list of students who bunked or came late using their android application. The application hits the server and the server replies with the list of students who bunked.

2.5 Parents Notification

In this module, parents will download to the android application .Incase student leave the class hours or comes late to the class, the HOD can send an SMS to the particular student's parents about their behavior.

2.6 Android Application for Parents

Develop an android application. We cannot store lot of data in a mobile due to limited memory. So, there is no space to store new files. Also we cannot delete the old files. However, loss is there. Mobile Client is an Android application which created and installed in the User's Android Mobile Phone. So that we can perform the activities. The Application First Page Consist of the User registration Process. We'll create the User Login Page by Button and Text Field Class in the Android. While creating the Android Application, we have to design

the page by dragging the tools like Button, Text field, and Radio Button. Once we designed the page we have to write the codes for each. Once we create the full mobile application, it will generated as Android Platform Kit (APK) file. This APK file will be installed in the User's Mobile Phone an Application.

3. EFFECTIVE ATTENDANCE MARKING ALGORITHMS

3.1THE VIOLA/JONES FACE DETECTOR

It's a widely used method for real-time object detection. Training is slow, but detection is very fast. Training Data – 5000 faces , All frontal – 300 million non faces ,9400 non-face images. The cascade object detector uses the Viola-Jones algorithm to detect people's faces, noses, eyes, mouth, or upper body. The Viola-Jones algorithm uses Haar-like features, that is, a scalar product between the image and some Haar-like templates. More precisely, let I and P denote an image and a pattern, both of the same size N × N, The feature associated with pattern P of image I is defined by

$$\sum_{1\le i\le N}\sum_{1\le j\le N} I(i,j)1_{P(i,j) \text{ is white}} - \sum_{1\le i\le N}\sum_{1\le j\le N} I(i,j)1_{P(i,j) \text{ is black}}$$

3.2 FEATURE EXTRACTION
GLCM, HOG, Gabor Filter Bank

Feature extraction a type of dimensionality reduction that efficiently represents interesting parts of an image as a compact feature vector. This approach is useful when image sizes are large and a reduced feature representation is required to quickly complete tasks such as image matching and retrieval. Feature detection, feature extraction, and matching are often combined to solve common computer vision problems such as object detection and recognition, content-based image retrieval, face detection and recognition, and texture classification.

GLCM (Gray Level Co-occurrence Matrix) Features

The GLCM is a well-established statistical device for extracting second order texture information from images. A GLCM is a matrix where the number of rows and columns is equal to the number of distinct gray levels or pixel values in the image of that surface. GLCM is a matrix that describes the frequency of one gray level appearing in a specified spatial linear relationship with another gray level within the area of investigation. Given an image, each with an intensity, the GLCM is a tabulation of how often different combinations of gray levels co-occur in an image or image section. Texture feature calculations use the contents of the GLCM to give a measure of the variation in intensity at the pixel of interest. Typically, the co-occurrence matrix is computed based on two parameters, which are the relative distance between the pixel pair d measured in pixel number and their relative orientation.

3.3 HOG (Histogram of Oriented Gradient)

Histogram of Oriented Gradients (HOG) features are a trending topic in object detection. HOG features are a robust way of describing local object appearances and shapes by their distribution of intensity gradients or edge directions, and have been used successfully as a low level feature in a number of object recognition tasks. Human faces are generally considered interesting and important to detect in many applications such as surveillance, recognition systems, biomedical, and video. HOG descriptors have been shown to significantly outperform existing feature sets for human detection.

3.4 Gabor Filter Bank

The Gabor filters (GF) are optimally localized in both space and spatial frequency and getting a set of filtered images which correspond to a specific scale and orientation component of the original texture. In this work 5 scales and 6 orientations are used in terms of Homogenous Texture Descriptor. The Gabor function defined for Gabor filter banks is written as

$$G_{p_{s,r}}(\omega,\theta) = \exp\left[\frac{-(\omega-\omega_s)^2}{2\sigma_{\omega_s}^2}\right] \times \exp\left[\frac{-(\theta-\theta_r)^2}{2\sigma_{\theta_r}^2}\right]$$

where $Gp_{s,r}(\omega, \theta)$ is Gabor function at the s-th radial index and r-th angular index $\sigma_{\omega s}$ and $\sigma_{\theta r}$ are the standard deviations of the Gabor function in the radial direction and the angular direction, respectively.

3.5 FACE RECOGNITION

EUCLIDEAN DISTANCE METHOD

In image analysis, the distance transform measures the distance of each object point from the nearest boundary and is an important tool in computer vision, image processing and pattern recognition. In the distance transform, binary image specifies the distance from each pixel to the nearest non-zero pixel. The euclidean distance is the straight-line distance between two pixels and is evaluated using the euclidean norm. The city block distance metric measures the path between the pixels based on a four connected neighbourhood and pixels whose edges touch are one unit apart and pixels diagonally touching are two units apart.

EXPERIMENTAL RESULTS

HOME PAGE

In home page they have four options like add students, update attendance, attendance details, logout. For adding any students can use the option add student. To update attendance we can make changes using update option. Also view the attendance detail using the attendance details option.

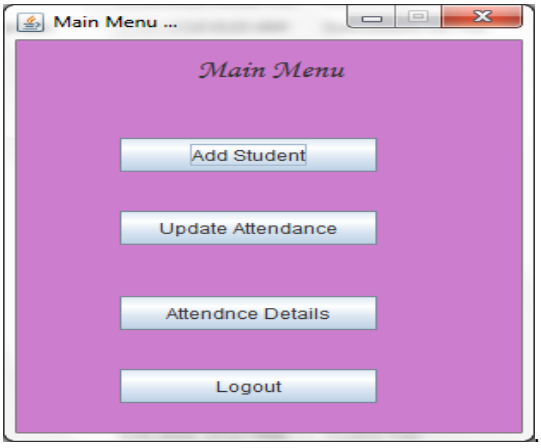

Fig: 3.1: User homepage

4.1 LOGIN

The User home page can also be the user menu page. In figure 4.1,the user should give their name and password. After providing the valid user name and password it will login to the database. If the user wishes to update their profile, they can update the changes.

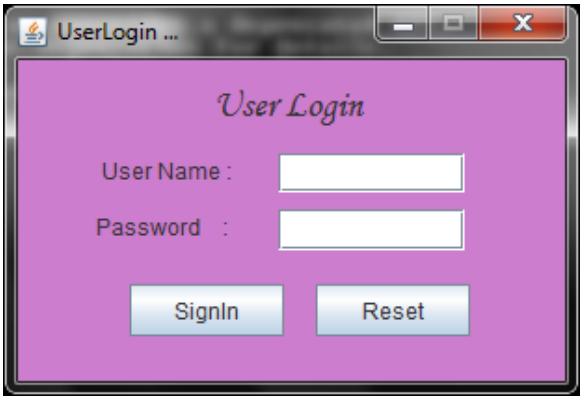

Fig: 3.2:user login page

4.2 UPDATE ATTENDANCE

Any changes in the student attendance can be modify by signing it . need to enter the the student id and name then their will be option like status in that status have to give what changes have to make it.

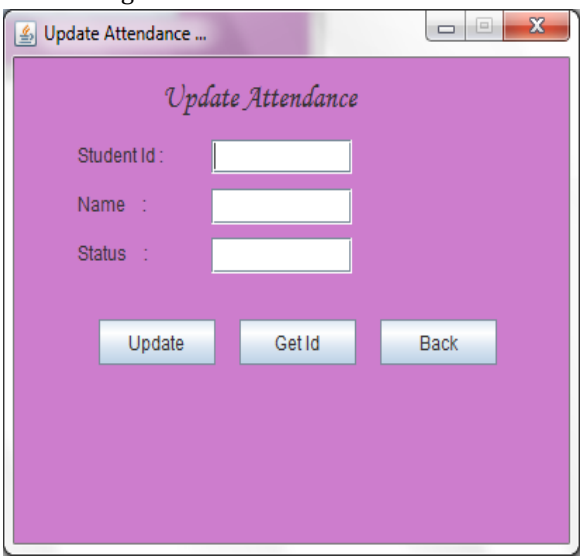

Fig: 3.3:user update page

4.3 STUDENT RECORD

In student database it will be record all the details of the student like either they are present then their time at when they enter the class and also their out time. This will be record all the student.

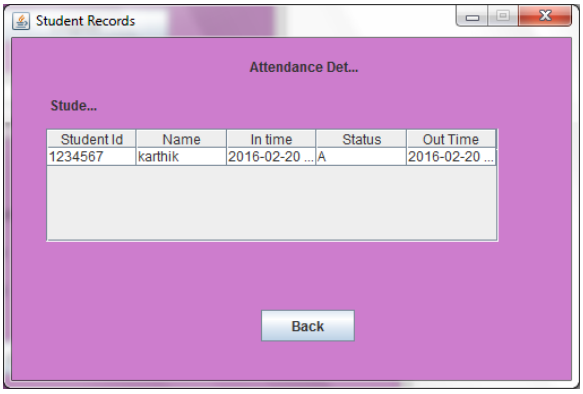

Fig: 3.4 :Student record details

5. CONCLUSIONS

This paper proposed a novel access control system that integrates the RFID and face recognition technology. A real time face detection method was adopted to detect human faces. The similarity between the detected and registered faces was measured by CW-SSIM. To speed up the authentication process, user pass the authentication when the similarity larger than a predefined threshold. The SURF was performed to align the detected and registered image when the user misses the authentication in the first pass.

REFERENCES

[1] G. Jong, P. Peng, et al., "Multi-recognition combined security system for intelligent car electronics," Int. Journal of Innovative Computing, Information and Control, vol. 8, Apr. 2012.

[2] A. Affandi, M. Awedh, et al., "RFID and Face Recognition Based Security and Access Control System," International Journal of Innovative Research in Science, Engineering and Technology, vol. 2, Nov 2013.

[3] X.-L. Meng, Z.-W.Song, and X.-Y. Li, "RFID-based security authentication system based on a novel face-recognition structure," WASE Int. Conf. on Information Engineering, 2010.

[4] X. Jiang, B. Mandal, and A. Kot, "EigenFeatures Regularization and Extraction in Face Recognition," IEEE Trans. on Pattern Anal. and Machine Intell., vol. 30, March 2008.