# AUTOMATIC WORKING-HOURS CALCULATION SYSTEM

# USING FACE DETECTION & RECOGNITION

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## ABSTRACT

The existing system Finger Punching System can save only starting & ending time of employee's presence in company. Employee can easily cheat the finger punching system if employee punch when he enters into office & leaves office immediately without punching. Thus, existing system can't ensure that employee is working in company when he punches in-time. Manually, checking CCTV for each employee is not efficient. Thus, most tedious job of maintaining employee record needs computerization. There are many biometric features that are suitable for recognizing human due to their uniqueness. Thus, using face detection technique we can monitor the person's presence using web camera.

Image processing system can help to analyse the biometric features. The time that registered employee is in front of the system (webcam) the system will calculate that time. This will automatically calculate the time of presence of employee in front of web cam once logins to the system.

**KEYWORDS***: Face Detection, Image Processing, Face Recognition, Pattern Matching*

## INTRODUCTION

In many companies or banks etc. employees leave their desk & goes outside. Some of them punches In-time & leaves office. Thus, working hours calculation using punching machine does not generates perfect results it can't ensure the employees working hours in company. Thus, in support of punching machine, the system that monitors the employee & ensures the employee's actual presence in front of the computer system.

Image processing is in form of processing the input as a image, such that photograph or a video frame & the output can be any characteristics or parameters that relates to the image. Face detection is determining that, if any part of image contains face. Automatic Working hours calculation System using face detection is new System for face detection & recognition for maintaining the time calculations of employee's time that in front of the system (that is connected to webcam).

It is advanced System for employee's working hour Monitoring. This will help for maintaining record of employee. This can be further used as security system. There are multiple ways to detect the face. Here face feature point algorithm will be used as it's accuracy is more than any other algorithm. We first locate the feature points and then apply Gabor filters in each point in order to extract a set of Gabor wavelet coefficients. We use wavelet analysis because it can localize, in space-frequency, characteristics of images and it can represent faces in different spatial resolutions and orientations.

This system will continuously observe the field & try to detect the face. If face is detected, the face points are matched with all the entries in the database. If face is recognised, timer will be started & that time will be saved in the database for the entry.

Hence, here video must not be saved in database. Only time will be updated for the particular time. This system uses facial points & the distance matrix to identify the face.

**Vector of Face Features**

*V* = [*Dcenter_eye; Deye; Dinterior_eye; Dnose; Deye_nose; Dmouth; Dnose_ mouth*] **[Ref.4]**

Using the distance between various facial feature points the face can be recognized & differentiated than other faces.

## LITERATURE REVIEW

First locate feature points. Then apply, Gabor filters in each point, in order, to extract the set of Gabor wavelet coefficients."According to" Face Detection and Facial Feature Localization for Human-machine Interface" by Md. Al-Amin BHUIYAN, NII Journal No. 5 (2003.3)

Face detection methods: Four categories: Knowledge-based, Template matching, Feature invariant, and Appearance-based. According to "EXTRACTING FACES AND FACIAL FEATURES FROM COLOR IMAGES" BY FRANK Y. SHIH∗, SHOUXIAN CHENG and CHAO-FA CHUANG, International Journal of Pattern Recognition 1 and Artificial Intelligence Vol. 22, No. 3

Geometrical methods, which are based on measures that are extracted between the facial features, such as eyes, nose, mouth. According to "Automatic local Gabor features extraction for face recognition" BY Yousra BEN JEMAA , (IJCSIS) International Journal of Computer Science and Information Security, Vol. 3, No. 1, 2009

Feature-based approaches first process the input image to identify and extract (and measure) distinctive facial features such as the mouth, eyes, nose; as well as other facial marks, and then compute the geometric relationships among those facial points, thus reducing the input facial image to a vector of geometric features. According to "A Survey of Face Recognition Techniques" By Rabia Jafri and Hamid R. Arabnia, Journal of Information Processing Systems, Vol.5, No.2, June 2009

A pair of eye candidates are selected by means of the genetic algorithm to form the possible face candidate. According to "An efficient algorithm for human face detection and facial feature extraction under different conditions" by Kwok-Wai Wong, Kin-Man Lam*, Wan-Chi Siu, Pattern Recognition 34 (2001) 1993}2004

**Steps of the System**

- Set Web camera on as system starts.

- If the face is detected, compare the facial feature points with the saved facial points all of the entries.

- If the match found, save the time into the database for the entry.

- Start the timer.

- If the recognised face is not detected, stop the timer.

- Calculate the total duration.

- Save the starting, stop time & duration of the particular entry into database.

## FUTURE SCOPE

This system can be used in banking to keep track of actual presence of employees. In Customer Service centres. This system can be used in Hospital Monitoring System to check presence of nurse or doctor in ICU. In Road-Signal Automation System, to check if there is any Traffic police or not, it can be modified and used. In Automatic Attendance System in colleges or school for checking if teacher is present or not in classroom.

## CONCLUSIONS

This automated system for monitoring the working hours of the employee using Image processing using face detection algorithms, will help us to keep track of the employee's records in working hours. Traditional approach to the employees record keeping can be replace using computerization. This will make a great support for making figure punching system into a strong monitoring attendance system. It will make a powerful system that can't be cheated easily by common employee.

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