



Smart Attendance System using face detection On Raspberry pi

Vishal D. Bikkad¹, Prof.Dr.S.B.Sonkamble², Snehal A.Mane³, Surabhi S. Sarada⁴

B.E Student, Department of Computer, JSPM NTC, Savitribai Phule Pune University, Pune, MH India^{1,3,4}

Professor, Department of Computer, JSPM NTC, Savitribai Phule Pune university, Pune, MH, India²

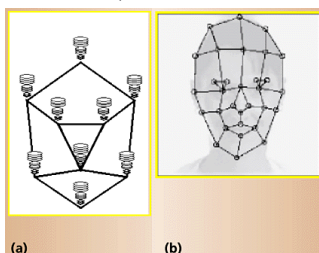
ABSTRACT: IN recent year, biometric based and RFID based attendance system are exist and popular. In this paper proposed a face recognition attendance system with IOT and high accuracy it access and control IOT devices, which is always, low cost and low power. Main aim to reduced documentation cost and efforts to the human are generated the digital classroom and offices. To The proposed face recognized system include three part face detection, feature extraction and face recognition. Find the face detection find out the face information. The extended local binary pattern then extracts the local features of the face. Use the various algorithm identify and verify haar algorithm for identification face and stored database model. Iot device raspberry pi use for face reorganization and communicate the cloud databases. Iot recent technology to generate live project .

KEYWORDS: Internet of thing (iot); Face recognition, Face Detections ,Haar detection,,Raspberry pi Introduction

I. INTRODUCTION

The internet of thing (Iot) is recently technology which is a concept that everything can be connected to internet and transfer information to each other, instead, its exist in every device to communicate on the internet, but also the IOT device are able to transfer intelligence to other device. This technology easily updating data and more sensitive to environment.

Face recognition technology emulates the capabilities of human eyes to detect faces. Smart computing that creates face bunch that consists of 70 nodal points does this[6]. Features are extracted from the face and saved as templates. These templates are compared to the face detected. For this research, we interfaced an Camera to the Raspberry Pi board. We have made a real time application, which compares the scans to records stored in the Raspberry Pi, Face detection and tracking has been used for the purposes of surveillance, security, human computer interaction, etc. Various methods of face detection are reported in literature, they include Viola Jones, Hari's corner, Principle component analysis, Haar classifier. In this research, Haar classifier extracted from Viola Jones algorithm is used for



the face detection[6]. The Eigen features of the face for tracking its position are detected using python and Raspberry pi[1]. Computational models of face detections and face recognition have been traditionally used mostly for the Purposes of criminal detection and recognition. These basic principles of image processing can be used for entertainment and gaming purposes as well. It can play an important and key role in helping us communicate between virtual and real world.

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 5, May 2018

II. FACE DETECTION USING HAAR ALGORITHM

Haar cascade classifiers is an effective object detection method proposed by Paul Viola and Michael Jones. It is a machine learning based approach. A cascade function is trained from a lot of positive and negative images. After that it is used to detect objects in other images. Here we will use face detection algorithm in that we need a lot of positive images that is images of faces and a lot of negative images that is images without faces to train the classifier. After that we need to extract features from it [7]. For this, haar features shown in below image. They are just look like our convolutional kernel.

Solve this, they introduced the integral images. It simplifies calculation of sum of pixels, how large may be the number of pixels, to an operation involving just four pixels. Nice, isn't it? It makes things super-fast.

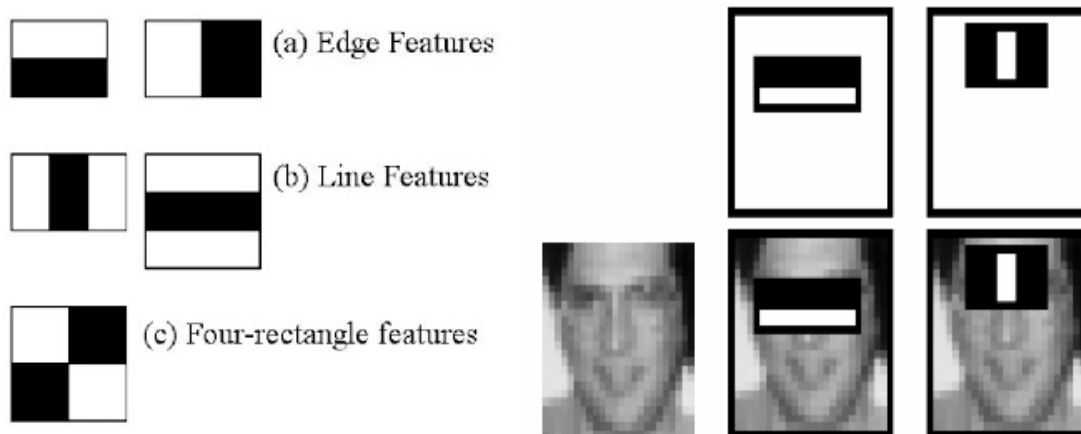


Fig :(Haar detection)

III.METHODOLOGY

A. The functionality of this system is mainly categorized in following steps.

- To detect the face using camera connected to raspberry pi.
- To face matching program written in python match the capturing images.
- Matching face mark attendance and does not matching face create warning message.
- After verification and validation the image create database.
- Using IOT this database stored in cloud.



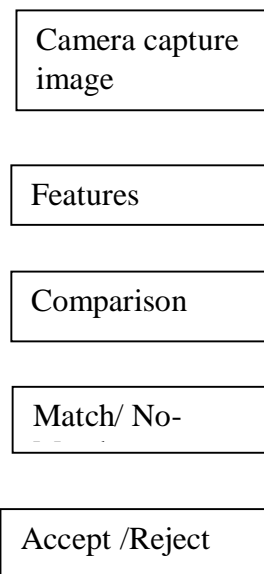
International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 5, May 2018

B. Basic system Design:



- Capture: - A physical world data sensed by camera it also identification and verification purpose.
- Feature extraction: - to capture data extract from the simple and templates is created.
- Comparison: - The capture templates compared with existing sampled data.
- Match/ no match: - The system decide if the features extracted from the new samples are a match or a no-match and accordingly accept/reject.

IV.SYSTEM DESIGN

Hardware Design:

Its include raspberry pi development kit, connecting cable, USB web camera.

1. Raspberry PI:

Raspberry pi is small scale based computer, it perform the efficiently, when it comes to running game, image file and documents. They can manufactured using different configuration as per user need.

Its run at 900 MHZ 1GB RAM with board graphics card capability. Required power 1.5 W and 64 bit OS.

Basic layouts of raspberry pi

1. Input /output
2. RAM
3. CPU/GPU
4. USB hub
5. Ethernet
6. HDMI port
7. Memory slot
8. RJ 45 switch

Camera:

A camera is an optical instrument for recording or capturing images, which may be stored locally, transmitted to another location, or both. The images may be individual still photographs or sequences of images constituting videos or movies. The camera is a remote sensing device as it senses subjects without any contact.



International Journal of Innovative Research in Computer and Communication Engineering

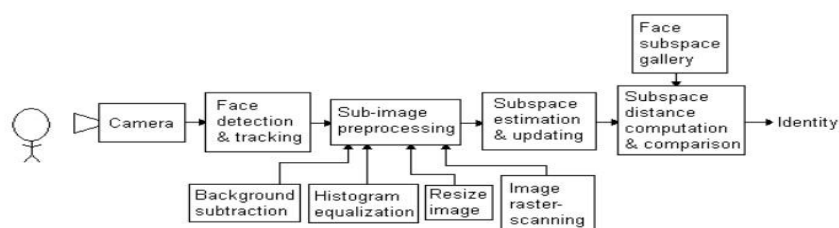
(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 5, May 2018

Software Design:

The programming language python is used for hardware setup and matching data. To access the editor Linux terminal is required. The face detection and reorganization also based on python language defined by following flowchart



V. CONCLUSION AND FUTURE WORK

A system generates correct attendance without any human Interfacing. To provide high security or to avoid fraud Documentation. Using this system teacher will gets satisfied and give more time to teaching. Automated Time and Attendance marking system can help schools and higher education in many ways. There is no doubt that an attendance management system will help save time and money by eliminating a great deal of manual processes involved in attendance and leave entry and calculating hours attended. With automatic class attendance system, teachers can more accurately and quickly track student's time on the classroom. It eliminate duplicate data entry and errors in time and attendance entries.

VI. ACKNOWLEDGEMENT

We would like to express our sincere gratitude to the staff of Department of Computer Engineering, JSPM NTC, Pune for their encouragement and support. We would also like to thank our guide Prof.Dr.S.B.Sonkamble who helped us in this research work.

REFERENCES

1. W. Zhao, R. Chellappa, P. J. Phillips, A. Rosenfeld, "Face Recognition: A Literature Survey", ACM Computing Surveys, Vol. 35, No. 4, December 2013, pp. 399-458.
2. M. A. Turk and A. P. Pentland, "Face recognition using eigenfaces" Proceedings. 1991 IEEE Computer Society Conference on Computer Vision and Pattern Recognition, Maui, HI, 1991, pp. 586-591.
3. Ningthoujam Sunita Devi and K Hemachandran, "Automatic Face Recognition System using Pattern Recognition Techniques: A Survey" Proceedings International Journal of Computer Applications, IJCA-13.
4. Pritish Sachdeva and Shrutik Katchii, "A Review paper on Raspberry Pi" Proceedings International Journal of Current Engineering and Technology, IJCET-14.
5. A. M. Patil, Dr. Satish R. Kolhe, Dr. Pradeep M. Patil (2009), "Face Recognition by PCA Technique", Second International Conference on Emerging Trends in Engineering and Technology, ICETET-09
6. R. Lienhart and J. Maydt, "An extended set of Haar-like features for rapid object detection," Proceedings. International Conference on Image Processing, 2002, pp. I-900-I-903 vol.1.
7. Face Detection and Recognition using Raspberry Pi Ishita Gupta¹, Varsha Patil², Chaitali Kadam³, Shreya Dumbre⁴ Kennedy Road, Pune, India² Savitribai Phule Pune University, India¹, 3.