



**IJIRCCCE**

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.488**

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 6381 907 438

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# Automated Appointment Assisting Reception System with Face Recognition Using Opencv

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**ABSTRACT:**The Appointment for consulting a person officially in a company or for any other business meetings have been traditionally recorded and maintained using phone calls and also through mails. This project aims to throw some light on the field of Computer Vision and ML techniques that can potentially revolutionize the way to acknowledge the appointments which are given to the persons or officials. In this project, an implementable idea of using the advanced Computer Vision and Machine Learning Techniques to eliminate printed appointment copies, Confirmation mail and Record Files has been proposed. The results of having a Face Identification for every consultants and persons have been properly showcased that take several factors into consideration like reducing the inefficiency, amount of time taken at reception and efforts of the consultants in recognizing the person whom to be met with and doubts in where they have to go for meeting the officials. Here a webpage will be provided to take appointments with giving the details of the person including live photo. Those data will be linked to the person's face image deployed on a secure cloud database platform that can be updated frequently to avoid the inconvenience of the visitors and when the persons coming at the time of appointment to the reception they will be identified with face recognition by taking the photo, and they will be acknowledged and assisted by the system where they have to go for meeting the officials.

**KEYWORDS:** Face Recognition, Opencv, Automated Appointment acknowledgement.

## I. INTRODUCTION

A facial recognition system is a technology capable of recognizing a face of a person from a digital image or video also with the real time applications. OpenCV-Python is a library of Python bindings designed to resolve computer vision issues. OpenCV was designed for computational potency and with a powerful specialize in real time applications. So, it's good for the live face recognition employing camera. We use harcasading algorithm with OpenCv to train and test the model. Haar Cascade classifier is predicated on the Haar Wavelet technique to investigate pixels within the image into squares by function. This uses "integral image" ideas to compute the "features" detected. Haar Cascades uses the Ada-boost learning algorithm that selects a tiny number of main features from a large set to give an efficient result of classifiers then use cascading techniques to observe the face in an image.

Haar cascade classifier is based on the Viola-Jones detection algorithm which is trained in given some input faces and non-faces and training a classifier that identifies a face. We create a file with the haarcascading algorithm, which stores the captured number of samples of the faces while taking the appointment in the database. Then we can access the database when the face detected in the reception system which shows acknowledgement to the persons if they have taken appointment previously or else it will show that the unknown persons detected.

## II. RELATED WORK

The components used in this project are Raspberrypi 3B processor, Webcam, Monitor with HDMA cable for display. In the Raspberrypi processor we using the Thonny python IDE. Thonny is a new IDE (integrated development environment) integrated with the latest version of the Raspbian with Pixel operating system. Using Thonny, it's now much easier to code. Thonny comes with Python 3.6 built in, so we don't need to install anything.

In this after collecting the samples creating with harcasading algorithm we need to use the classifier to recognize the faces detected in the reception. For that we use HBPH classifier to recognize the persons. We integrated the 'haarcascade\_frontalface\_default.xml' file which is a pre-trained model for frontal face detection from the Open-CV

Local Binary Patterns Histogram algorithm was proposed in 2006. It is based on local binary operator. It is widely used in facial recognition due to its computational simplicity and discriminative power.

We use numpy to perform the numerical operations by accessing the builtin functions in the numpy. NumPy (Numerical Python) is a Python library used to do the operations with arrays. It conjointly has functions

for working in domain of linear algebra, fourier transform, and matrices. NumPy was created in 2005 by Travis Oliphant. It is an open source project and can use it freely.

We import OpenCv and numpy in raspbianThonny IDE by the code import. Then we can access the libraries throughout the code wherever needed.

### Proposed system

The Person can able to book their appointments for meeting officials in a company or any institution by registering their details in a web page with their live photo. This webpage was created with a php file where the user entered details such as name, email, mobilenumber, appointment time can be sent to store into the database. The captured samples of live faces during the registration of appointment will be converted into binary pixel values and stored as input training data in accordance with harcasade file with their details. This process involves three major steps. They are Face detection and data gathering, training the classifier and testing the recognizer. The Face detection and data gathering will be takes place when taking the appointment. And the model training will be done automatically with the code integrated in the Thonny python ide. When the person enters the reception, they will be captured with a camera which is connected with the raspberrypi and the face detected in the live video will be recognized with the comparison of the data stored in the database already. The faces detected will be cropped by the recognizer in the given dimension to recognize the features of the faces. Now these values will be taken as predicting input values and ML OpenCv API is used to predict the details of the person. By using the details of the person it will assist them to meet the concern officials or person by displaying the acknowledgement.

### III. RESULTS

In the display which is connected with the raspberrypi the face will be detected with the camera. When a face is detected in the camera the classifier with already trained model having the frontal features will detect and crop the frontal face layers as gray levels and then compares the gray levels with the already collected samples during the appointment. If the comparison matches the name and appointment time of the person will be displayed with the confident level. The confident level shows that the maximum number of features matching to the face. The feature includes eye portion, conclidean distance between the two eyes and the diameter of the frontal regions, noselength, and the colour with gray levels.

The confident level will be always more than 75% in this recognition system. The level of confident will be high only when there is more number of training samples. If the samples are less then the confident level will be low..

If there is a user who did not get appointment detected in the camera, they will be recognized as a unkown user also with the confident level.



Fig.1 Raspberrypi3



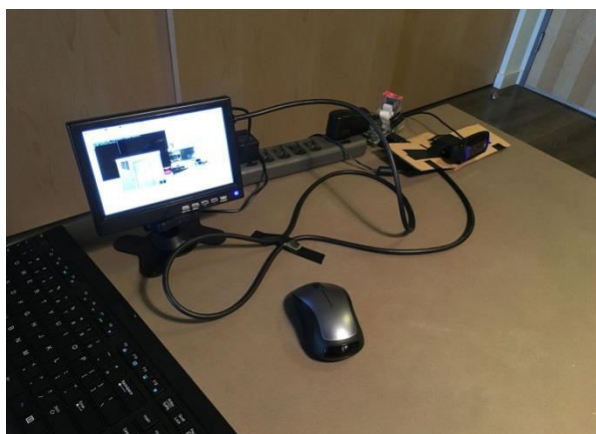


Fig2. Raspberrypi3 connected with camera & display

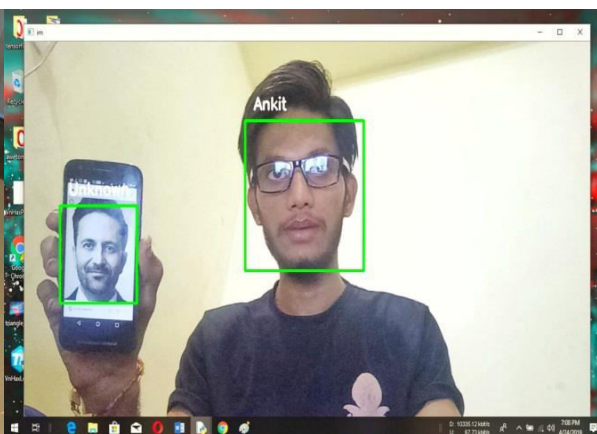


Fig3. Output with Face recognition

#### IV. CONCLUSION AND FUTURE WORK

Upon successful implementation we have achieved the output that could recognize the face of the person and book an appointment, With the advantages of saving time for people for appointment and user friendly interference.

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Impact Factor:  
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