

## VISION BASED MOVING OBJECT DETECTION AND TRACKING

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### ABSTRACT

Moving person detection and tracking and detection using color features is the initial step in biometric system and video surveillance. The main purpose of our system is to detect the object, track the object and identify the predominant color by using moving or static camera. Here we track object, detect and recognized the object using RGB layer matrix and PCA(Principal Component Analysis) algorithm. This is done by the virtue of "Matlab 2015a" software. To detect the color RGB layer matrix algorithm is used. The famous approach is used to convert RGB frame into HSV( Hue Saturation Value) and extract the pixels value and R,G,B by subtracting reference value minus threshold value. The facial realization system uses PCA. In PCA every image is a sum of products of each quantity time constants of eigen vectors which are called as eigen faces. Eigen faces obtained from Co-variance matrix.

**INDEX TERMS:** Vision system, PCA algorithm, Eigen Value, Eigen Vector, Co-Variance, Euclidean Distance , Eigen Face, Moving Object Detection And Tracking.

### I. INTRODUCTION

Person detection and tracking is one of the hot researched area in surveillance. The proposed system cut off the expenditure and drawbacks of traditional computer vision system. All the other proposed systems of identification and verification like finger print access, iris scanning are of high definition(HD) quality and much costlier. But in the proposed system we are able to used 2-D static/moving camera to capture frontal video and person for the purpose of person's recognition. Color realization is one of most advanced features in biometrics, video surveillance, face indexing in multimedia contents. Color recognition system uses the basic 3 colors i.e. Red , Green , Blue. This are segmented . Each color pixel has its very particular pixel value which can obtained by subtracting threshold value from reference pixel value.

### II. RELATED WORK

Performance of motion person detection and tracking system demand people to be traced fast enough so that moving person can be detected in video and proceed in real time. The current performing system uses the frame difference algorithm for object tracing system. In this exertion monochrome camera is used to capture the video. Once the videocassette has been captured, for tracking purpose Template equivalency is used. The object in the video is detected it is tracked and templates of detected images are generated to match with the database.

These are the work on following algorithm which are included some steps for moving camera by pan tilt system.

1. Take current image and previous image.
2. Subtract Current image – Previous image
3. Select starting value.
4. If the subtracted value of image is greater, then threshold object is detected

5. Find center of recognize object
6. Generate template and take coequal of template
7. (Template equivalency algorithm)

IF the template equivalency is successful then

It will show that person is traced and displayed with his or her name.

IF image frame is not matched

Then it will show not found.

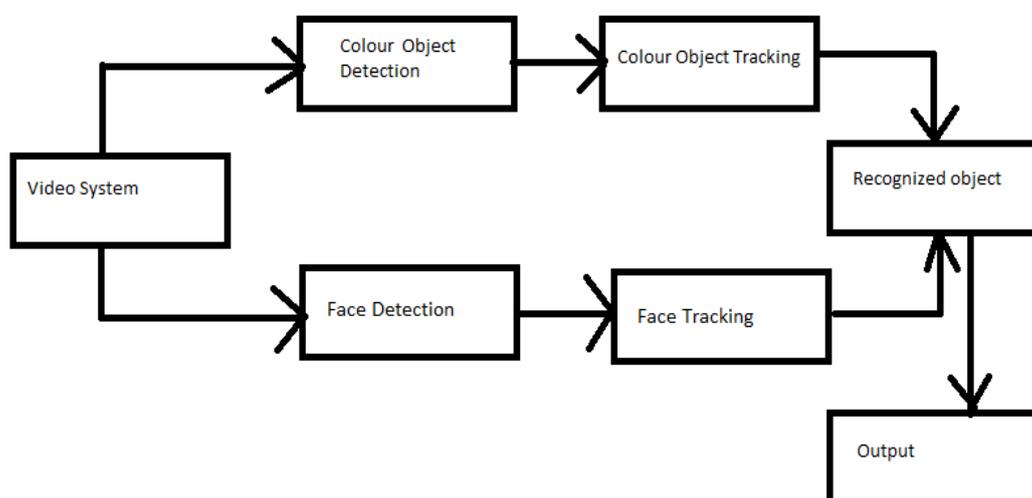
8. Get the direction of horizontal and vertical movement of traced object.

9. Else go to step 1.

The initial color model is used for color recognition

which includes R,G,B. This colors are segmented and they are identified. Threshold value of this color is above 300 pixels. The RGB color should recognize when the weight of pixels is above 300. It will not consider color whose pixel weight is below 300 pixels.

### III. OVERVIEW OF SYSTEM



- ▶ **Video System:** Video system is used for copying , playback, and broadcasting purpose. Years ago video system was an analog. There are 2 most common video standard used NTSC and PAL.
- ▶ **Color Object Detection:** The colors are arranged in distinctive combination. It is easiest way to detect object, by using color difference. There should be difference in foreground and background of an image.
- ▶ **Face Detection:** In this we compare human faces with database. In database different we create different human beings data with which we can compare and get detected face.
- ▶ **Tracking of color and face:** It converts the video into no of frames of an images. In this we locate object with respect to time and we found that object using camera.
- ▶ **Recognized object:** If the detected face feature and database contents are perfectly matched then it is called as Recognized object.

### IV.COLOR RECOGNITION PROCESS

Color recognition has two parts:

- 1) Color Segmentation
- 2) Color Recognition

- 1) **Color Segmentation:** In this we divide image into no of small fragments. So that recognition of color will be easier irrespective of illumination. Thus it involves image representation in a easier way. Therefore it is easy to analyses image and it is more meaningful.

2) Color Recognition: If the detected color is matched with primary color then there will be presence of color recognition.

## V.FACE RECOGNITION

Face realization is based on PCA (Principal component analysis) algorithm. In this algorithm simple method is used known as Eigen Face, Eigen vector method. Due to this method , the process of face recognition is become easy, speed of recognition is increases. Its sensitivity is more than other algorithm like HOG(Histogram of oriented Gradient), Bags of Words. PCA algorithm involves following process;

1. Initialization
2. Recognition

1)Initialization Process: It involves following operations

- i)Create training set of an images.
- ii)Convert each image into vector format.
- iii)Normalize the face vector space.( So that average face contains only information which is present in all training set images e.g. mouth, eyes etc.).
- iv)Subtract Training set image-Average face.
- v)Calculate Eigen vectors for which we need to calculate covariance matrix C.
- vi)Calculate Eigen Faces/Eigenvectors.
- vii)reduce the size of vector.
- viii)select and update best Eigenvectors.

Recognition process: It is a process of recollection and distinguishing object. Data is get processed for real world.

## V.CONCLUSION

We have presented and implemented face realization system and color detection(RGB color) process using PCA algorithm, image differentiation algorithm and RGB layer matrix algorithm

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