FACE COUNTER USING MATLAB

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Abstract-*This paper presents the automatic people face counting in a classroom using MATLAB. Where the number of people present at the specific location, this system used to count people face present in desired location with high accuracy using video camera, where count the people faces in real time. The basic idea to first use the frame difference to detect the rough edges of the people face, morphological processing, skin color detection, face feature detection and last count the human faces.*

Key words: Moving object segmentation, Skin color, Webcam, GUI, Time

1.INTRODUCTION-

In day to day life the counting students in a classroom is done manually ,it consumes large time, also distraction of students such that this project to count the number of students present according schedule of lectures. It gives the accurate data of the number of students present in the any lecture or practical. It doesn't require anytime. Attendance monitoring is important in school and colleges the teacher are counting the total students presents in class but sometime they make mistakes so count is not accurate due to this error are caused in final count. So this problem is solved using this face counter system. This time is based on real time.Any large industry number according to their number of days are they work are counted automatically and the end of the month we pay them salary easily.One of the important applications of counting includes counting people easily in a hall or in a shopping mall etc. People can be counted based on the number of faces detected. Face detection is the process in which the human faces are detected from a color image. Once the number of faces are detected the density can be calculated. There are many ways by which faces can be detected one such method is skin based detection. Rectangles can be used to map the faces in the image. Face detection is used in many day today application.The automatically face counting using the system of face counter where the counting is highly challenging where some variety of techniques or Parameters are used to proposed by the face counting system. Some techniques are moving object segmentation, skin color detection, face detection and counting. The skin color detection to improve the accuracy of the face detection we applied the reference white with NCC(Normalized Color Coordinates) color spaced consider with balance white color automatically and changes of skin color in images caused by intensity difference in light.

MATLAB-

MATLAB is a high-representation language for technical performance. It integrates computation, contemplate, and programming in an easy-to-working area where problems and solutions are state in familiar notations. Standard utilize are following:

• Mathematics and estimate.

• Creating algorithms

• Data obtain.

• Modeling and prototyping

• Data analysis and contemplate

MATLAB is the computational utilize choice for research, development, and obtain.It has image processing tools which are used in processing.

• MATLAB is the level of contemplate environment for all working fields.

• MATLAB has various other tools which are used in mathematical, scientific, engineering etc. It also provides a GUI interface.

2. Literature survey-

1.Mora Albiol and V. Naranjo, "Real time high density people counter using morphological tools"(Dec 2001)-
This paper deals with an application of image sequence analysis and number of people who get into and out of train carriage when it is crowded, and background and or illumination changes. The proposed system analyzes image sequences and processes them using an algorithm based on the use of several morphological tools which are presented in detailed in the paper.

2,T.H. Chen, T.Y. Chen, "An intelligent people flow counting method for passing through gate"(June 2006)-
 This paper presents automatic people counting system based on face detection, where the number of people passing through a gate or a door.

3.Work flow of proposed system-
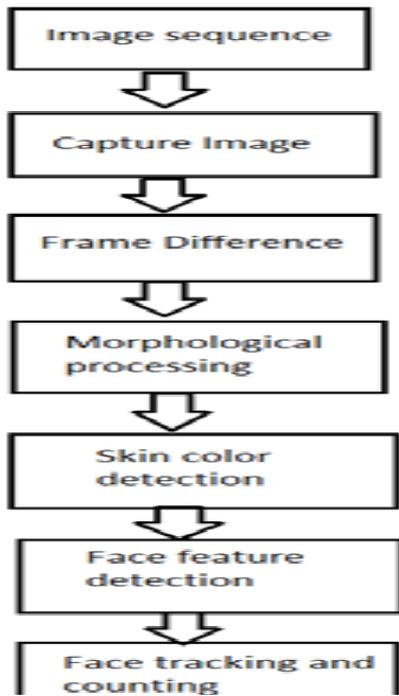
3.1 Work flow description-

3.1.1. Frame difference-In this moving object segmentation is used. This method is proposed to the deleting a general moving object background. The background subtraction method is used this method means subtracts the background it doesn't include faces. The background subtraction doesn't accurate, so we use this technique. In this filter is used by using filter to remove noise in moving object segmentation.

3.1.2.Morphological processing- The morphological concepts and technique are used in project is a powerful set of tools for extracting feature of interest in an image component and description of region shape such as boundaries, skeleton and the convex hull. One of the most appealing aspects of morphological image processing is the extensive set theoretical foundation from which morphological technique are evolved. In fig a image are binary, with 1's shown shaded and 0's shown white.
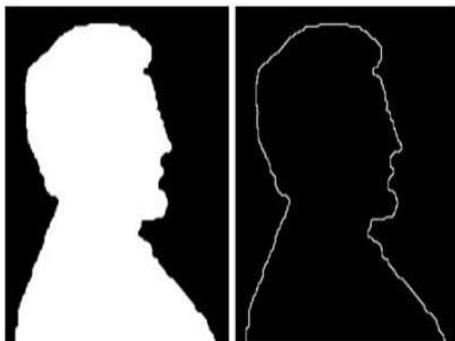
3.1.2.1.Morphological operations-

1. Erosion-This is an operation that thins or subtracts the objects in the binary image. T
2. Dilution- This is an operation that grows or thickens the objects in a binary image

3.1.3. Skin color detection- In this skin color detection technique to improve accuracy of the face detection to used normalized color coordinates (NCC) the image processing toolbox handle all color images either as method construct background model and remove the foreground image by the using frame difference operation between the captured   image and image sequence. Some of the system the background subtraction indexed images or RGB (Red Blue Green). Skin color detection is the process of separation between skin and non-skin pixels. It is difficult to develop uniform method for the segmentation or detection of human skin detection because the color tone of human skin is drastically varied for people one region to another.

3.1.4. Face feature detection-

Face feature detection which detects facial expression which have applications face recognition, head pose estimation and face morphing. This system based on face detection using matlab that can detect not only a human face but also, eyes and upper body. With the skin tone selected as the feature to track

3.1.5. Face tracking and Display count- Total number of faces present in current image that count will display on screen. We set up a counting line in the image. If the moving objects (human face) entry the tracking area, we

analyze the center of the face to get the tracked objects moving direction. Then, we count the face passing through the tracking area.

If the human faces move, the coordinates of the center will change during the different time periods. However, the moving volume of the center is limited between two adjacent images. We measure the moving volume of the center between two adjacent images though Euclidean distance. The Euclidean distance formula is shown as the following:

$$Dist = sqrt ((x_t-x_{t-1})^2+ (y_t-y_{t-1})^2)$$

Where the t is denoted as the time, (x, y) is denoted as the coordinates of the center.

4. RESULT-
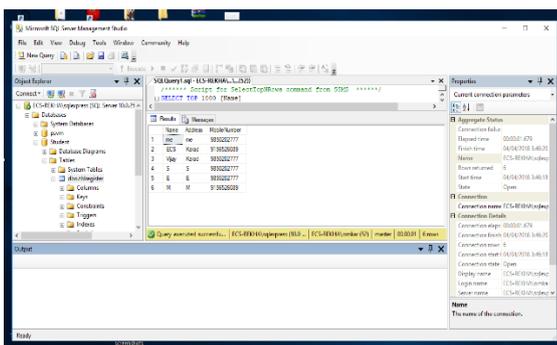
In the finally this project count the number of faces. Such that this system used as attendance for industrial applications. By using employees data base such as persons name, address, mobile number by that information verifies person. Where data base already registered and finally at last number of faces detected.
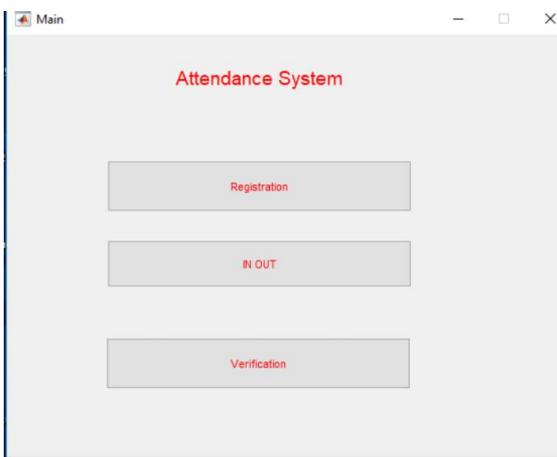
This window shows the count of detected faces and verifies and registration of the captured faces from the camera as well as webcam.In this system, all these elements modeled through a desktop metaphor to produce a simulate in the software in which the display represent the GUI window, on which documents and folders of documents can be registered . Window

managers and other software combined to simulate the desktop environment with varying degrees of realism.

5.CONCLUSION-

The computational models, which were implemented in this project, were chosen after extensive research, and the successful testing results confirm that the choices made by the researcher were reliable .The system with manual face detection and automatic face recognition did not have a recognition accuracy over 90%, due to the limited number of eigenfaces that were used for the PCA transformed. This system was tested under very robust conditions in this experimental study and it is envisaged that real-world performance will be far more accurate. The fully automated frontal view face detection system displayed virtually perfect accuracy and in the researcher's opinion further work need not be conducted in this area. The fully automated face detection and recognition system was not robust enough to achieve a high recognition accuracy. The only reason for this was the face recognition subsystem did not display even a slight degree of invariance to scale, rotation or shift errors of the segmented face image. However, if some sort of further processing, such as an eye detection technique, was implemented to further normalize the segmented face image, performance will increase to levels comparable to the manual face detection and recognition system. Implementing an eye detection technique would be a minor extension to the implemented system and would not require a great deal of additional research. All other implemented systems displayed commendable results and reflect well on the deformable template and Principal Component Analysis strategies. The most suitable real-world applications for face detection and recognition systems are for mug shot matching and surveillance.

ACKNOWLEDGEMENT

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