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# Face Recognition using Video framing Techniques

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**Abstract:** Face recognition is one of the prominent field of research & development in digital image processing. It detects face from frames of video. As we know video is series of frames played in certain time interval. This paper talks about face recognition using fisherface algorithm. Frame from video is taken and it undergoes of fisherface algorithm. This algo works as landmark in machine learning & data science.

**Index Terms:** Fisherface, Frames, Boundarybox,

## I. INTRODUCTION

Face recognition is great solution for security issues & it takes less budget as compared to manual face identification. Face recognition is useful in machine learning based projects like automatic driving car. Face recognizing is done in steps 1) Face detection 2) Face expression recognition.[2] It identifies the face using the boundary detection using canny edge detection. As we know expression on face is nothing but formation muscular activities of respective facial muscles. By extracting features, we detect the various landmarks of face like nose, mouth, eyes, chin etc. & there edges which derives the expression of face. These obtained the database for face recognition which get compared to input video frames which get segregated using suitable framing technique.

The image is processed moving objects are recognized and detected using the regularity of a way that each and every information can be gathered and collected easily. Video recorded will be processed then it will be divided into frames each frame is used as separate object of operation & it will be recorded & analysed

The video frame extraction algorithm is used for the motion-compensated scan conversion of series of frames.

## II. FACE EXPRESSIONS

Micro expressions are facial expressions that occurs within fraction of seconds. As we know there are some basic facial micro expressions which are frequently used-

### A. Happiness

These facial expression gives us the edges at the cheek parts & shiny detection below eye sites. happiness expression is surprisingly gives analogy with crying face, it is major challenge while building software comparator.



### B. Anger

This is one of the commonly used expression. It is easy to detect as iris of eye get larger (minute change occurs).

### C. Contempt

These is one of the micro expression which is hard to detect.



Fig.-face with contempt expression

Besides all of these there are many micro expressions which are real challenges for digital video processing & major task to develop data set for comparison.

#### D. Video Frames

We are talking about video frames but no. of frames in video are different as per the resolution of video. If we are watching the two hour movie of standard definition  $720 \times 480 \times 24$  bit pixel array, and playing it in rate of 30 fps (frames per seconds) then it becomes

$$30 \text{ frames} \times (720 \times 480) \text{ pixel} \times 3 \text{ bytes} (24/8)$$

$$= 31,104,000 \text{ bytes/sec} [3]$$

Means it uses lot of 224GB. & this much of data contains

$$120 \text{ mins} \times 60 \text{ Sec} \times 30 \text{ frames}$$

$$= 216,000 \text{ frames in movie.}$$

So here comes major challenge of video frame segregation in this much of data.

#### E. Face Recognition Techniques

There are many techniques for face detection but we are here to use easiest one of boundary box method & fisherframe method in this project.

It contains the boundary box commands in python

Here we have written basic code for the detecting the mouth detection as face detection is formed by the detecting the detecting detection of singular objects.[3]

```
Detector = vision.CascadeObjectDetector('mouth');
```

```
Detector.MergeThreshold = 100;
```

```
Bbox= step (detector,a);
```

```
Video Out=insert Object Annotation(a,' rectangle', bbox' mouth');
```

```
imshow (video Out);
```

### III. METHODOLOGY

#### A. Video Processing

For face detection, in a video, an object detector is required to detect the location of the face in a frame Vision.[1]. video processing includes major task of image extraction or frame formation for further processing. these frame forms the raw dat for the face recognition.

#### B. Frame Processing

This step is highly unpredictable, where it depends on the characteristics of image (frame). this step may use filtering, compression or sometimes directly boundary box formation by various edge detection operations are done [3].



### C. Filtering

Filtering usual method of image enhancement. Sometimes the images are not in pure forms they are get affected by various software issues & editing which may cause the inappropriate face detection inspite of the good detector threshold. list of discrete filteres used in the image filtering is as follow 1) linear filtering 2) morphological filtering [2]

### D. Boundarybox Formation

This is one of the important step in the face recognition. it gives us the output of the process. this is one of the easiest way of the detecting the object & it is based on various edge detecting algorithms like sobel, prewet, canny etc. [3] It also various morphological operations Here as we can see in the output of our algorithm we can detect the face of object named Shivani & recognise it using the stored dataset of images.

### E. Fisherface algorithm

This is algorithm which uses a two diamentional array to form LDA, which gives us the data analyses of respective frame. [5]

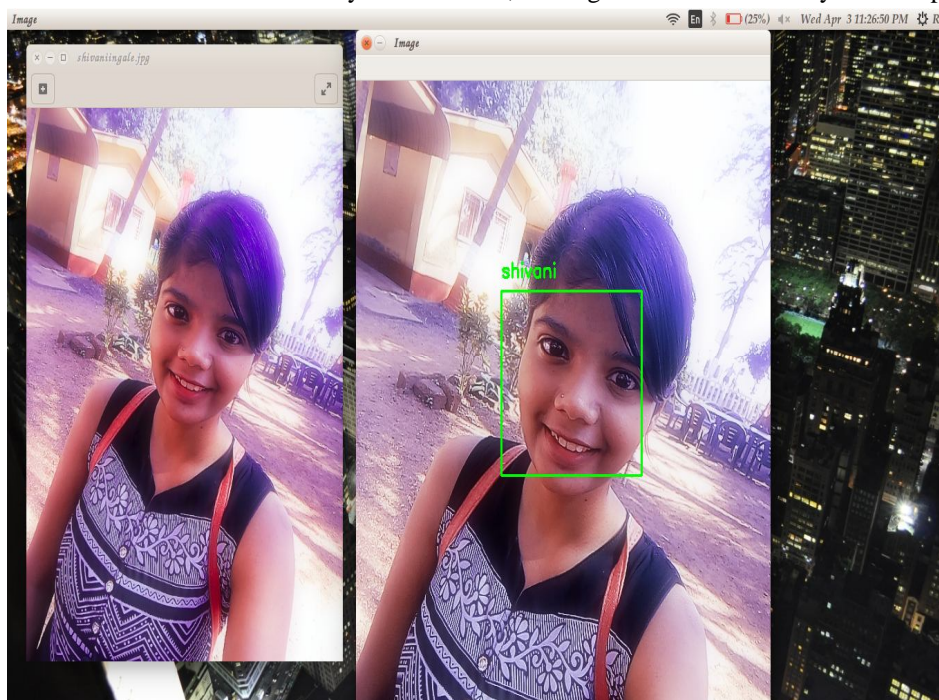


Fig.3-face with boundary box using recognition techniques.

## IV. SOFTWARE USED

Here we have used the softwares like MATLAB for training dataset of the respective person which gives us exact info about a detected face. We have also used OpenCV for developing logic in python to detect the face & recognizing it.

## V. CHALLENGES

- Extracting frame from live video is one of the major task in this type of experiment. As video rate can be different, that's why we have to train the model in that kind of adjustable format. Sometimes aspect ratio of frames can change during video also [3].
- An individual video has distinctive motion features & objects, colour histograms, motion histograms, text features, audio features which causes work of noise in low level of face detection. [4]
- When we use these project as security need, it some times comes under the conflictions made by human behavior & moments. [1] It may get confused due to placing of camera at the top location & object does not showing face to that side.
- There are many challeges like finding faces in images with vrious edited & unusual background, finding face by colour, finding faces by motion, finding faces in unconstrained scenes [2]

## VI. APPLICATIONS

- A. We are here to use this system in security applications
- B. We can use this prototype for the automatic driving car
- C. This type of data collection and analysis can be used to train the humanoids in the future development.
- D. Other than security these type of analysis can be used in various aspect of nationwide identity formation & tracking of someone by matching the huge database.

## VII. SUMMARY

In summary, the aim of this paper

- A. To identify a video face-track using a large dataset of still face images.
- B. To perform face detection and face-tracking using boundary box based tracker algorithm.
- C. To solve Regularized fisherframe algorithm is used algorithm using local binary operators to obtain more appropriate edge solutions
- D. To filter the the image(frame) by morphological operations.
- E. And higher classification accuracy.
- F. To detect known personalities and reject unknown individuals.

## VIII. CONCLUSION AND FUTURE WORK

In this paper a fully automatic end to-end system for video face recognition is presented, which includes facetracking and identification of persons from both still images of the known dictionary and video for recognition. Furthermore the face recognition gives us secure future in the terms of various algorithm. outperforming the average precision by 7%. In future, the effect of fisherframe, in less noisy frames, the area of domain transfer for transferring knowledge from the still-image domain to the videos can be considered.[2]

Using various operators we can derive the better simulation of face detection can be possible, such enhancement in the face recognition techniques leads to better future to dip. Morphological operators are operators with basic algebraic combinations

## IX. ACKNOWLEDGMENT

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