SURVEY ON CLASSIFICATION AND SUMMARIZATION OF SPECIFIC ACTIONS FOR SPECIFIC PLAYER ON CRICKET VIDEO SHOT

[1]Pinkal V. Chaudhari, [2]Mahasweta J. Joshi, [3]Hemant D. Vasava
[1]P.G Student, [2]Assistant Professor, [3]Assistant Professor
[1]Dept. of Computer Engineering,
[1]Birla Vishvakarma Mahavidyalaya Engineering College, V.V.Nagar, Anand, India

Abstract: A face Recognition method is implemented to find a particular person. Here we are detected specific player from whole cricket inning video and summarize it, there are many techniques are available for face detection, in this paper we are discussed some of them in brief.

Index Terms - Object Detect Using SURF, Face Recognition Using PCA, LDA.

I. INTRODUCTION

Video summarization is a process of creating & presenting a meaningful abstract view of entire video within a short period of time. Main objective of this paper is to summarize whole video only for Specific Player. Abstract video for specific shorts like four, six, out etc. and high light the specific event from video. After football, cricket is the second most popular sport in the world. In India, cricket has a large number of followers with first position. Cricket is played in three different formats like trial, one day and T-20. Cricket is a game played between two teams of eleven players for each team [11].Several television channels broadcasting cricket videos face the problem of making it easier for a user to retrieve interesting parts of a video from the huge volumes of video data available. Manually indexing large volumes of video data is a trivial task. Now a day there is an increasing demand for efficient video retrieval and indexing systems [11]. "Video synthesis methods try to abstract occurrences, scenes or main objects in a clip to provide a synopsis that is easy to interpret." Video consumes a lot of time, low quality video, a noticeable increase in video generation in recent years. Specific situations: film advances, TV episodes and documentary summaries, home videos and football highlights, etc. Interesting events in surveillance videos (important commercial application

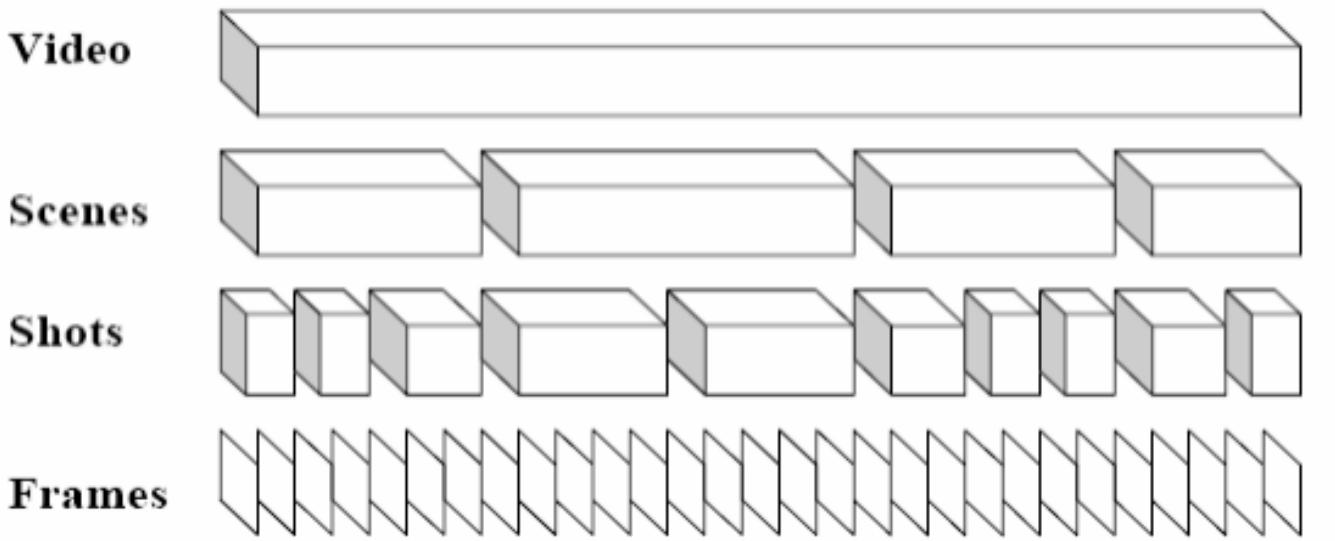

Fig 1. 1Overview of video

II. LITERATURE REVIEW

2.1 Human Face Recognition Based on PCA Method using MATLAB

In 2015, Jageshvar K. KecheVikas K. Yeotikar Manish T. Wanjari Dr. Mahendra P. Dhore, presented a document on the "Recognition of human faces based on the PCA method using MATLAB". The system receives input from the ENT database and is recognized by the training set. Recognition is done by finding the Euclidean distance between the entrance face and our training set. The results were simulated using MATLAB. This approach is certainly simple, easy and fast to implement identification, verification and authentication [3].

2.2 Object detection and recognition by using enhanced Speeded up Robust Feature

In 2016, A. Al-Asadi Tawfik and Ahmed Obaid J., the document "Detection and object using an improved and accelerated improvement of the function" present technique based on the detection of objects. to detect and recognize objects in the scene is based on the SURF algorithm, improving the detection performance of Object descriptor selecting stronger features, our proposed method correctly detects one or more objects in the image data set and calculates the corresponding scores to the object in the scene by applying three types of threshold and precision measurements are the recognition of objects in different conditions of rotation, partial occlusion, changes in lighting improved illumination image input and orientation. Many real-time applications using the SURF algorithm can detect how objects are displayed, our model calculates a lot of information that is used throughout the detection of phase objects, so our proposed model is easy to use, in which it is possible to select and change many parameters such as the selected threshold and the octaves used for the detection and recognition process [2].

2.3 An Efficient Approach in Face Recognition for Invariant Faces using SIFT, SURF and PCA

In 2016, Yukti Bakhshi1, Sukhvir Kaur2 and Prince Verma3, his work "An Effective Approach for Facial Recognition Faces Using SIFT, SURF and PCA" Present three methods are SIFT, SURF and PCA for face recognition to solve the coincidence problem of images in the case of invariable faces. This method is quick and offers better recognition speed. This is a method of cash facial recognition using the SIFT and SURF features to extract the characteristics of facial images and, finally, the PCA technique is applied to the image to achieve better results in case of variations in expression and contrast, as well as the rotation. The local PCA descriptors SIFT and SURF are more robust than the original local SIFT descriptors [4].

2.4 Face recognition using SURF features

In 2009, Geng Du *, Fei Do, Cai Anni, presented a report on "Face Recognition using Surf features". They present the features of SURF in facial recognition and offer detailed comparisons with the characteristics of SIFT. The features of SURF have slightly better performance than SIFT, but there is a clear improvement in the speed of coincidence. Therefore, the characteristics of SURF proved to be adequate for facial recognition.

2.5 Video Summarization: Techniques and Classification

In 2012, Muhammad Ajmal, Muhammad Ashraf Husnain, Muhammad Shakir, and Faiz Ali Yasir Shah Abbas and presented a document on "Video Synthesis: Technique and Classification". They present techniques. The user wants to concentrate on the characteristics of the video. Features such as color and movement and voice, etc.

2.6 Face Recognition and Detection Using Hausdorff Distance, SURF and SVM

In 2016, Pawana Sharma1, Sachin Sharma2, presented a report on "face detection and recognition with distance, and SVM Hausdorff SURF". They are used to obtain a better average error rate, matching time, and accuracy result. Research work is limited to the acquisition of facial recognition from a single image. The work can be extended into several images at the same time. You can consider more and different parameters in the future. In addition, new algorithms can be applied to improve face detection and minimize execution time.

2.7 SURF-Face: Face Recognition under Viewpoint Consistency Constraints

In 2009, Philippe Dreuw, Pascal Steingrube, Harald Hanselmann and Hermann Ney presented a paper on the theme "SURF-Face: facial recognition at the point sight restrictions restrictions", studied the use of SURF descriptors compared to the SIFT descriptors for recognition Facial We have shown that using localized aspiration features grid based approach rather than a based point detection extraction of interest, the SURF descriptors and SIFT descriptors can be used for face recognition, especially in combination with a grid-based compatibility of coherence of the point of view.

III. FACE RECOGNITION ALGORITHMS

In this document, the most environmentally friendly way to gain popularity for invariants is to use the SIFT SURF and PCA strategies. The use of the SIFT and SURF algorithm for detection capabilities and then follows PCA to fit in sentences of rotation, expression and pose. Model recognition uses verification and identification of two components [4].

PCA: these methods are used for Eigen faces where images are small and reduce the size of data. Image Compression Provides the most effective low-dimensional structure of the facial model and each face image is represented as a vector of weighted sum characteristics of the Eigen faces that are stored in the 1-D array. A linear technique widely used in tactics based on the main aspect for FR. These approximate objectives to solve the problem of popularity within an illustration space lower than the image area [4].

SIFT: the SIFT descriptor is invariable on scale, rotation, transformation, noise and is highly distinctive. The characteristics of SIFT are four main steps in detection and representation; (1) find the end of the scale space; (2) position and filtering of key points; (3) orientation assignment; (4) descriptor of the key point [4].

SURF: SURF extracts key points from data set images and edited images. This coincides with the key points between the modified image and each image in the database. In the descriptor SURF it is invariable with a scale and the rotation characteristics in the plane. It has two stages (1) detector of points of interest and (2) descriptors of points of interest. The first stage, identify the point of interest in the image. The use of the jute matrix to find the approximate bearing is the difference of the Gaussian filter (DOG) used in the SIFTS and in the points of interest of an image. The second stage used descriptors to extract the feature vectors at each point of interest only in SIFT. Normally, SURF uses 64 SURF dimensions to reduce the cost of time for both function matching and computation. SURF has a three times better performance than SIFT [4].

In this document, the Propose job first starts reading the input image and is preprocessed into a grayscale image. Therefore, the features will be extracted from that image using the SIFT and SURF algorithms respectively. It will be a produced image consisting of both functions using SIFT and SURF.PCA will be applied directly to that image. The goal of PCA is to extract the important characteristics of facial data to delineate it as a set of new orthogonal variables that are called main components. Now the coincidence will take place between the input image and the image in which PCA is applied with different expressions, contrast and rotation for invariable faces [4].

IV. OBJECT DETECT USING SURF

In this document, first read an integral image to store the object's set and image, which will detect characteristic points using SURF to form images and find the basis of the strongest characteristic point in the threshold value. The strongest image function is the extraction function and the corresponding function pairs and controls a sufficient number of function pairs. Apply the RANSAC algorithm to eliminate the wrong combined features [2].

In this document, two different methods to characterize the extraction 1. Extraction of expressions based on points of interest and 2. Based on grids.The robust characteristics of acceleration (SURF) are an invariant function of scale and rotation in the plane. Contains detector and descriptor of points of interest.

4.1 Interest point detection:

A difference in SIFT that uses DoG to detect points of interest, SURF uses the determinant of the approximate Haar matrix as the detector base. To identify the point of interest, we detect structures similar to points at points where the determinant is maximum. The integral images are used in the approximation of the Haar matrix, which drastically reduces the calculation time.

$$H(\mathbf{x},\sigma)=\begin{bmatrix} L_{xx}(\mathbf{x},\sigma) & L_{xy}(\mathbf{x},\sigma) \\ L_{xy}(\mathbf{x},\sigma) & L_{yy}(\mathbf{x},\sigma) \end{bmatrix}$$

$$\det(H_{approx}) = D_{xx}D_{yy} - (\omega D_{xy})^2$$

Where ω is a weight for the energy conservation between the Gaussian kernels and the approximated Gaussian kernels, and

$$\omega = \frac{\left|L_{xy}(1.2)\right|_F \left|D_{yy}(9)\right|_F}{\left|L_{yy}(1.2)\right|_F \left|D_{xy}(9)\right|_F} = 0.912 \approx 0.9$$

|X|F is the Fresenius norm. For scale invariant, the SURF constructs a pyramid scale space, like the SIFT. Different from the SIFT to repeatedly smooth the image with a Gaussian and then sub-sample the image, the SURF directly changes the scale of box filters to implement the scale space due to the use of the box filter and integral image [2].

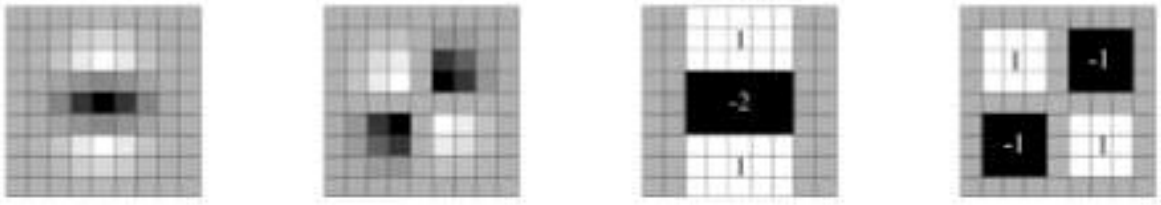

Fig 2. 1The box filters of approximations of Gaussian second order partial derivative. The figure shows Lyy(x, σ), Lxy(x, σ), Dyy(x, σ), and Dxy(x, σ) from left to right [5].

4.2 Interest point description

SURF used the sum of Haar ripple responses to describe the characteristic of a point of interest. The wavelet filters were used to calculate the responses in the x and y directions. To extract the descriptor, the 1st step is to construct a square region cantered on the point of interest and oriented according to the orientation decided by the orientation selection method introduced in. The region is also divided into a subset of 4 × 4 smaller regions. This preserves important spatial information. For each sub region, calculate Haar ripple responses in equidistant 5 × 5 sample points. For simplicity, we call right the Haar ripple response in the horizontal direction and the Haar wave response in the vertical direction. To increase the strength of geometric deformations and position errors, the Dx and Dy responses are first weighed with a Gaussian centred on the point of interest.

Fig 3. 2The Haar wavelet filters used to descript the interest points [5]

Hence, the wavelet answers dx and dy are added together in each sub-region and form a first set of inputs in the feature vector. To bring information about the polarity of intensity changes, we also extract the sum of the absolute values of the answers, | right | and | dy |. Therefore, each sub-region has a four-dimensional descriptive vector v for its underlying intensity structure v = (Σdx, Σdy Σ | dx |, Σ | dy |). Concatenating this for all 4 × 4 sub-regions, we obtain a vector descriptor of length 64. The wavelet responses are invariant with respect to a bias in the illumination (displacement). The invariance of controvariance (scale factor) is obtained by converting the descriptor into a unit vector [2].

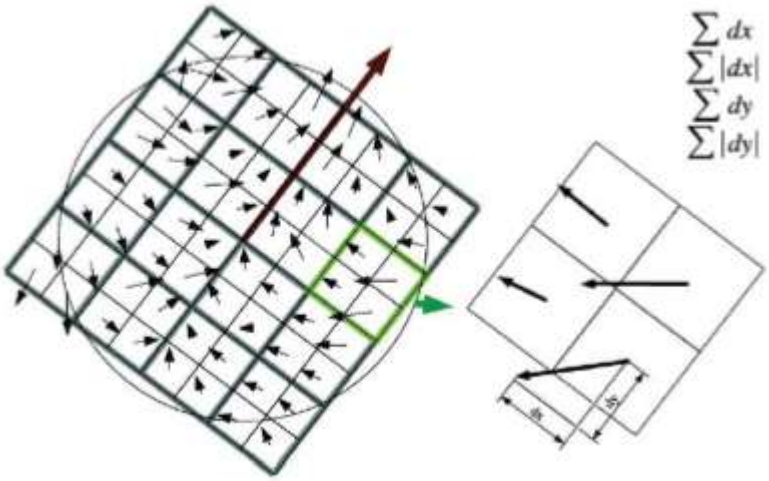

Fig 4. 3The demonstration of descriptor building [5]

4.3 Fast index for matching

To speed up the coincidence step, use the Laplacian sign for the point of interest. Only the pair of points with the same sign is combined with the characteristics.

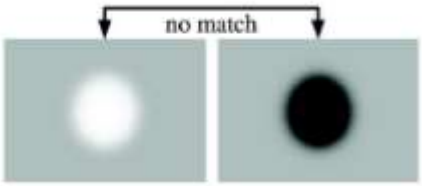

Fig 5. 4The fast index for matching [5]

V. FACE RECOGNITION USING PCA

In this article we present the biometric identification technology that identifies people based on their facial Features. The innovation uses a camera or a webcam to ensure images or video sequences that contain human aspects, recognizes and tracks the face in the image, then performs a face recognition. The facial recognition system has four parts. (1) Acquisition and detection of facial images, (2) facial image preprocessing, (3) facial features extraction and (4) facial matching and recognition [5].First read the original color image. Then the extraction of the face region of a size of 128x100 pixels which applies RGB to the grayscale image [5].

Fig.6. Original color image[4]

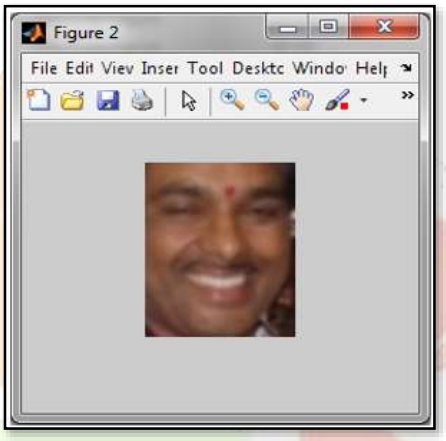

Fig.7. Extraction of face region of size 128x100 pixels[4]

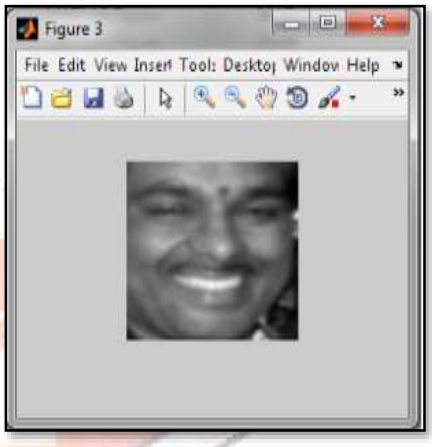

Fig.8. Extraction of grey-scale face region of size 128x128 pixels[4]

VI. CONCLUSIONS

For many years, facial recognition research is an exciting area and will retain many committed researchers, scientists and engineers. Therefore, we are using the most flexible and efficient method for facial recognition: SURF functions for facial recognition and detailed comparisons with the characteristics of SIFTS. The experimental results show that the characteristics of SURF have a slightly better performance than SIFT, but there is a remarkable improvement in the speed of coincidence. Therefore, the characteristics of SURF proved to be adequate for facial recognition.

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