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AN EFFECTIVE APPROACH FOR VIDEO COPY DETECTION USING SIFT FEATURES

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ABSTRACT:

A SIFT features is an effective approach for video copy detection. To detect and describe local features in images scale-invariant feature transform is used. The purpose of video copy detection is to decide whether a video segment is a copy of video from train video database or not. SIFT image features provide a set of features of such as object scaling and rotation. We first use dual-threshold method to segment the videos into segments with homogeneous content which helps to extract key frames from each segment. SIFT features are extracted from the key frames of the segments. SIFT features are very flexible to the effects of "noise" in the image. SIFT Applications include object recognition, robotic mapping and 3D modeling, navigation, image stitching, video tracking, gesture recognition, , individual identification of wildlife and match moving.

KEYWORDS: Video copy detection, key frames, SIFT features, dual-threshold method, graph-based matching etc.

INTRODUCTION:

With the rapid invention done in hardware and software technologies, the cost of image and video data collection, creation, and storage is becoming low. Every day tens of thousands of video data are generated and published. Among these there exist large numbers of copies or near-duplicate videos.

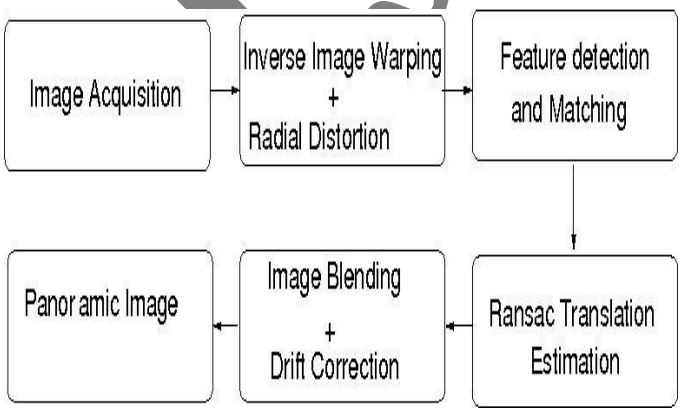

Fig. No.1. Basic Block diagram of SIFT Technology

According to statics 27 % redundant videos are duplicate or nearly duplicate on the most popular version of a video in the search results from Google video, YouTube, and Yahoo! video search engines. As an effective and efficient method for video copy detection has become more and more important.

Video sequence matching is used to match the query video and train video. The video copy detection system returns the name of copy video in the video database If they finds a matching video segment and the time stamp where the query was copied from. While allowing for an object to be recognized in a larger image SIFT image features also allow for objects in multiple images of the same location which is taken from different recognized positions within the environment.

The objective of the video copy detection is help to find the existence of copy sequence in the target video or not, when input a query video. There are much uncertainty in the process of video copy detection, for example, whether there exists a copy in the video, what is the length of copy clip, and where is start and end position. Therefore, it is difficult for video copy detection to employ some supervised learning methods, which makes video copy detection more difficult than the ordinary video retrieval.

To resolve this problem, we propose a video copy detection using scale invariant feature transform algorithm. This method h have ability to simultaneously locate more than one copy in two comparing video sequences, advantages of high accuracy in locating copies, being able to compensate the deficiency in description of image low level features and reducing detection time costs. The Scale invariant feature transform (SIFT) algorithm is used to match two images with Scale invariant feature transform feature point sets and comparing the similarity of two key frames in the whole framework. Also the dual threshold method is used to segment the video into segments and extract key frames from each segment.

LITERATURE SURVEY:

Xiao Wu et al. (2009): In this paper, time duration and thumbnail image are two critical context features used

to eliminate the near-duplicate web videos. In this paper, the contextual information from number of views, thumbnail images with the content analysis derived from color, time duration and local points to achieve real-time near-duplicate elimination.

Zi Huang et al.(2010) : This paper gives an accurate and practical system for online near-duplicate subsequence detection with continuous video streams. This method propose to transform a video stream into a one-dimensional video distance trajectory monitoring the continuous changes of consecutive frames with respect to a reference point, in which is after segmentation , result is represented by a sequence of compact signatures called linear smoothing functions (LSFs). **An** efficient sequence skipping strategy is embedded to avoid unnecessary sequence similarity computations, an.

Yonghong Tianl et.al (2011): In this paper, method proposes a video copy detection approach which exploits sequential pyramid matching (SPM) & complementary audio-visual features. Several independent detectors first match visual key frames and then aggregate the frame level results into video level results with SPM, which calculates video similarities. At the end, detection results from basic detectors are fused and further filtered to generate the final result.

Mohammad Athar Ali et al.(2012): This paper proposes an efficient video copy detection method. The mechanism is based on (CBCD) content based copy detection The given method divides each frame within a group of three consecutive frames into a grid. All corresponding grid across these groups of frames is then sorted in an ordinal vector which describes both, the temporal variation as well as the spatial. This ordinal matrix based copy-detection scheme is effective in detecting both a copied video clip but & its location within a longer video sequence. The technique has features like to work in the compressed domain which helps to makes it computationally very efficient.

OBJECTIVE:

The objective of the project is to detect whether the query video frames are a copy of a video from the train video database or not.

- Auto dual Threshold is used to eliminate the redundant frame.
- SIFT algorithm used to compare SIFT features of the two frames.
- Video sequence matching is used to match the query video and train video.

PROPOSED WORK:

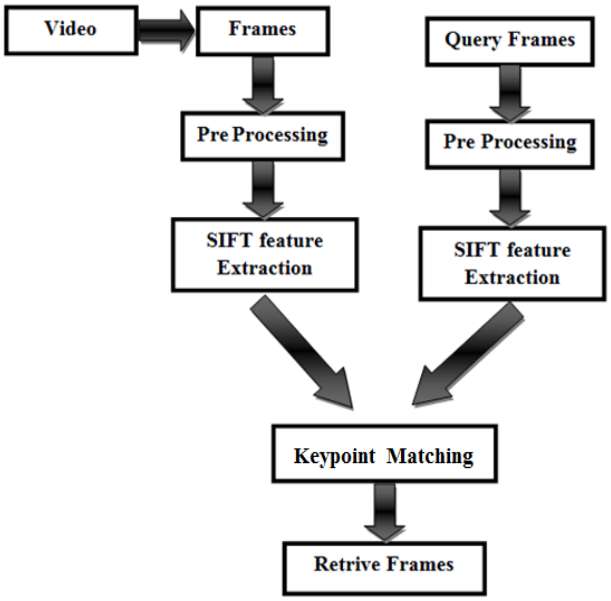

Fig. No.2.SIFT Technology flow chart

The proposed work is as follows:

1. First use the auto dual threshold method to segment the videos into segments with homogeneous content.
2. Extract key frames from each segment.
3. SIFT features are extracted from the key frames of the segments.
4. We use SIFT algorithm to match two video frames with SIFT point set descriptors and to obtain video sequence matching result.

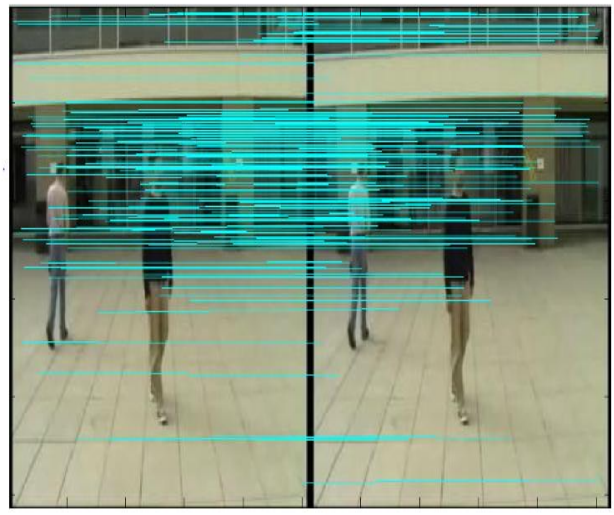

Fig. No.3. Example 1 of Segmentation and Graph-Based Video sequence matching

Fig. No.4. Example 2 of Segmentation and Graph-Based Video sequence matching

- **AUTO DUAL-THRESHOLD:**

This method is used to eliminate the redundant video frames. This method cuts consecutive video frames into video segments by eliminating temporal redundancy of the visual information of consecutive video frames

- **SIFT DESCRIPTOR:**

In SIFT it uses the matching algorithm. Cross-correlation between the image grey levels returned unstable performance, depending on the kind of transformation considered. The considerations above suggested the use of a SIFT descriptor. The reason for this behavior is in the feature descriptor adopted.

- **KEYPOINT MATCHING:**

The best candidate match for each key point is found by identifying its nearest neighbor in the database of key points from training images. The nearest neighbor is defined as the key point with minimum Euclidean distance for the invariant descriptor vector.

FUTURE SCOPE:

- Scale Change using affine parameters
- Try to switch to SURF (Speeded Up Robust Features) if possible for performance boost Compare results '
- Increase Accuracy of prediction

CONCLUSION:

To describe video frames local feature of SIFT is useful. The video copy detection using SIFT features has high computational cost. So that we use the dual threshold method to eliminate redundant video frames and use the video sequence matching for finding a video copy. When various transformations applied to the original image like picture in picture, insertion of patterns, strong re-encoding and these kinds of duplicate images used in videos ,in that case video copy detection is very useful.

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