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LOGO MATCHING AND RECOGNITION IN VIDEO CLIP

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ABSTRACT

We present a method for detecting the logos from videos. We first include a basic feature-matching algorithm using SIFT, nearest-neighbor matching and RANSAC. Large numbers of features can be extracted from typical images .The features are unique, which allows a single feature to be correctly matched with large database of features, providing a base for object and scene recognition. . Video can easily be divided into frames. These individual frames can be used as input images to check against reference logos from archive. As output count of all logos appearing in the video can be displayed.

KEYWORDS: Context-dependent kernel, logo recognition, logo detection.

INTRODUCTION

In industry, logos are often connected with quality and standard of the product or services. Logos generate sense of faith and genuineness among consumers. Today lot of products in consumer market uses logos similar to famous brands. Products with fake logos may not provide facilities as original well-known brands which may lead to consumer disappointment and bring foul name to original renowned brand.

Large production of data from companies and growing popularity of social websites like Twitter, Facebook and YouTube for sharing images and videos forces to do research effectively to provide solution for object recognition and detection to support the annotation of video and image. In industry logo plays an important role. Logos set the expectation of people with the certain product or facilities. Because of this, companies are now requesting smart image analysis solutions to scan the logo archives and find the evidence of similar existing logo to avoid the misuse of logo. Logos are the graphic production which highlight a name or recall some real world object or simply display some abstract sign that have strong appeal

The graphic layout is vital in logo to capture the attention of the people and convey the message. Different logos may have same layout with small changes in position of the graphic features, changes in the shape and size or in the case of mischievous tampering differ by missing few individualities [see Fig 1.] Logos often appear in t-shirt of players, billboards of the shop and posters in the sport stadiums. In many cases this logos are subjected to alterations corrupted by lighting or noise effect. Such logos and images have relatively low resolution and quality. Logos included in region contain few information and might be small. In these case logo recognition and detection has become important for a number of applications. Logo detection in broadcast video of sport is challenging

Fig 1.Pairs of logos with small changes in details or spatial arrangement [1].

Problem many firms invest large amount of money in sport marketing cost of these investment is high so sponsors require verification of how many time their logo appeared in order to evaluate return of their investment.

Logo detection in broadcast video of sport event is challenging and interesting problem .Many firms invest large amount of money in sponsorship and sport marketing. This investment include trademarks, logos in the form of object such as banner, billboards. It is placed within an area in which sport event is carried out such as volleyball or basketball court, golf course etc. As the cost of investment is very high sponsors need verification of visibility of their logos or trademark in order to evaluate the return of their investment. The early work on logo detection was to provide support to logo registration process the system must check whether new coming logo image have the similar appearance to the other registered logos in achieve of millions in order to avoid the confusion and to ensure that it is distinctive.

DESIGN AND IMPLEMENTATION

Text Detection using OCR

Firstly we use OCR (optimal character recognition) technique for text detection, which detect the text from an input image

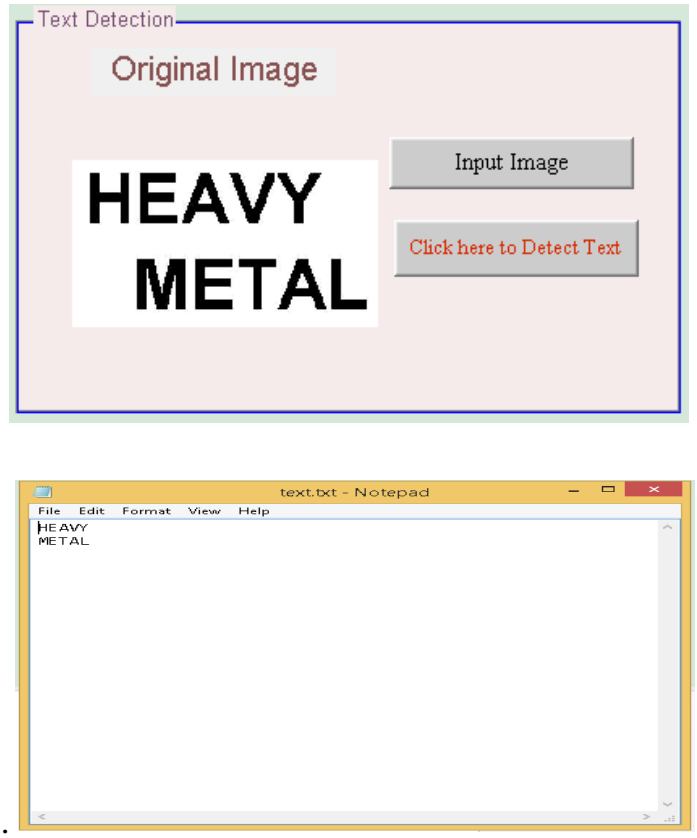

Fig 2: Text Detction Using OCR

Logo Matching And Detection

In second part we take logo and input image as an input then we apply SIFT to extract the feature and to show the matching result of logo image and input image. Then we apply RANSAC to find the outliers as well as to show the detected logo portion in bounding box

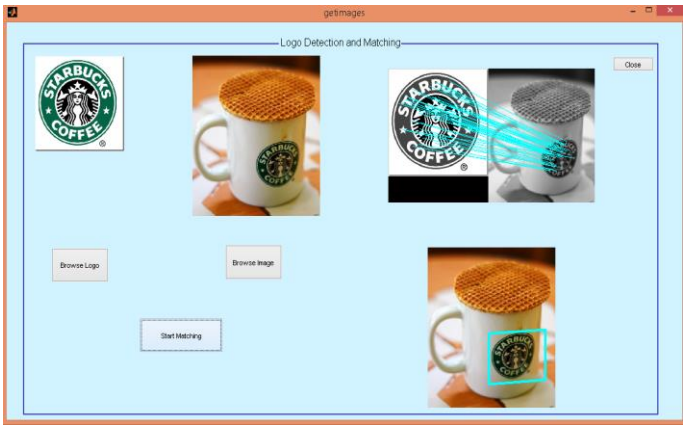

Fig 3: Output Of Logo Matching and Detecion

Logo matching and detection in video

In third part we detect the logo from video. Video can easily be divided into frames. These individual frames can be used as input images to check against reference logos from archive. As output count of all logos appearing in the video can be displayed. So By using SIFT and RANSAC we were able to detect logo from video

Fig 4: Output Of Logo matching And Detection in Video

PROPOSED METODOLOGY

Early work on logo detection and recognition was to provide support to logo registration process. The system must check whether other registered logo in archives, exist that have same appearance to the new coming logo image to ensure that it is unique and avoid confusion. We present the method for detecting logos from video, Firstly we use OCR(optimal character recognition) technique for text detection, which detect the text from an input image. In proposed system the process consists of following processing steps: (1) Scanning of Image, (2) Pre Processing of Image (3) Character Extraction (4) Feature Extraction and Recognition (5) Post-Processing.

A. Pre Processing
The image is taken and is converted to gray scale image. The gray scale image is then converted to binary image. This process is called Digitization of image

B. Character Extraction
The pre-processed image serves as the input to this and each single character in the image is found out [13].

C. Recognition
The image from the extraction stage is correlated with all the images which are preloaded into the system. Once the correlation is completed, the image with the maximum correlated value is declared as the character present in the image. [13]

D. Post Processing
After the recognition stage, if there are some unrecognized characters found, those characters are given their meaning in the post-processing stage. Extra templates can be added to the system for providing a wide range of compatibility checking in the systems database [13].

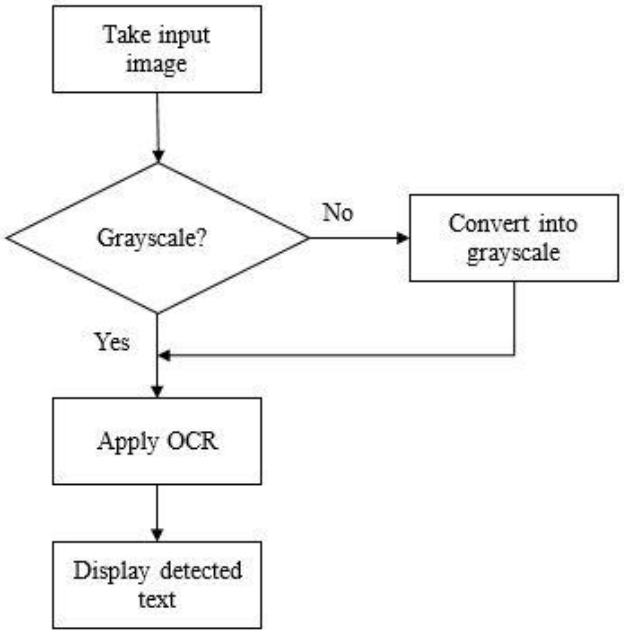

Fig 5: Data flow diagram for text detection

Then SIFT(scale invariant feature transform) is used to extract the feature of both input image and image stored in database.

The features are unique, which allows a single feature to be matched against a large database of features, providing a source for object and scene recognition. Following are the major stages of computation used to generate the set of image features:

1. Scale-space extrema detection: The first stage of computation searches over all scales and image locations
2. Key point localization: At each candidate location, a detailed model is fit to determine location and scale
3. Orientation assignment: One or more orientations are assigned to each key point location based on local image gradient directions.
4. Key point descriptor: The local image gradients are measured at the selected scale in the region around each key point. These are transformed into a representation that allows for significant levels of local shape distortion and change in illumination. This approach has been named the Scale Invariant Feature Transform (SIFT), as it transforms image data into scale-invariant coordinates relative to local features. For logo matching and recognition, SIFT features are first mined from a set of reference images and stored in a database. A new image is matched by independently comparing each feature from the new image to this previous database and finding candidate matching features based on Euclidean distance of their feature vectors.

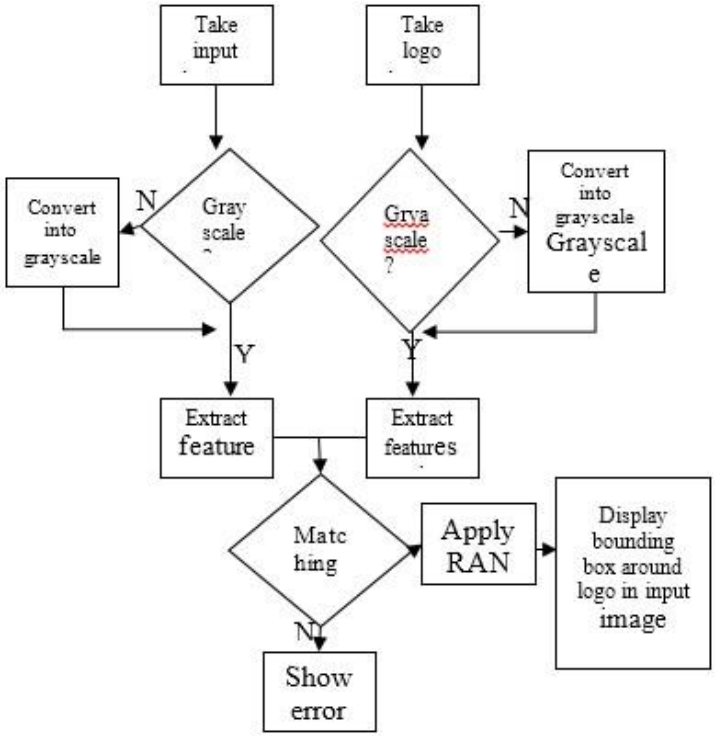

Fig 6: Data flow diagram for logo matching

CONCLUSIONS

We introduced logo matching and detection approach. We carried out complete project in 3 steps firstly we use OCR (optimal character recognition) technique in order to detect the text from an image, we take image as an input and apply OCR to get detected text. Then we use SIFT (scale invariant feature transform) to extract the feature and to display the matching result then we detect the logo part from video. In that we divide the video into frames Video can easily be divided into frames. These individual frames can be used as input images to check against reference logos from archive. As output count of all logos appearing in the video can be displayed. So By using SIFT and RANSAC we were able to detect image.

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