A Near Comparison of Logos to Prevent Duplication of Products using Enhanced Algorithm

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Abstract **:- The design of a unique variational framework that is able to match and acknowledge the reference logos present in image archives. original logos and test images are seen as constellations of native features (interest points, regions, etc.) and matched by reducing an energy function mixing: 1) a exactness term is employed to measures the standard of feature matching, 2) an adjacent criterion that captures feature occurring at the same time and 3) a regularization term that controls the potency of the matching solution.**

Keywords—Matching logos; accuracy;occlusion factor.

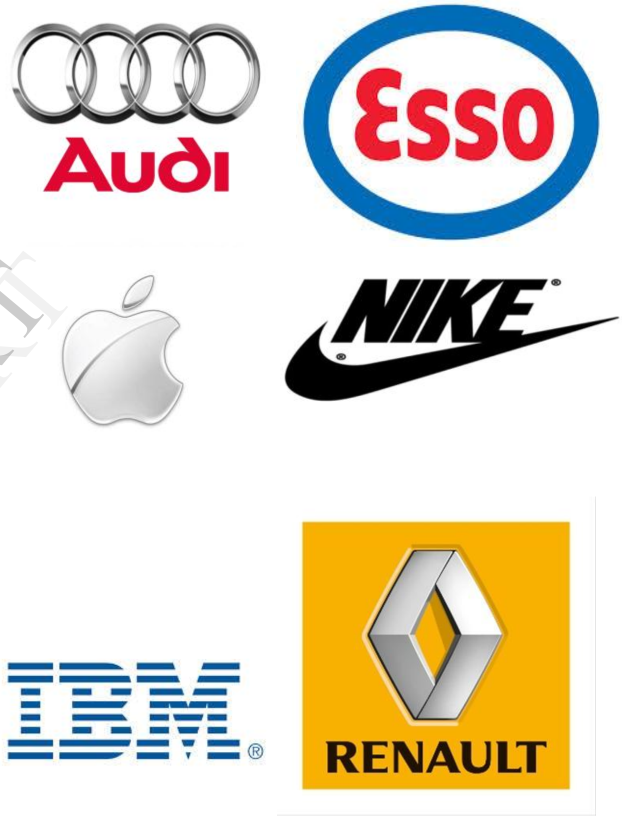
I. INTRODUCTION

Nowadays all social media is employed for all medias to convey the messages via twitter,flickr,youtube etc.social media afford large variety of information that contain valuable messages in manifold contexts. Moreover anyone can access this information by means of subscription charges or freely manner.

Graphic logos are a specific category of visual objects extremely vital to estimate the identity of one thing or somebody. Logos ar graphic productions that either anamnesis some planet objects, or accent a reputation, or just show some abstract signs that have effective sensory activity attractiveness.

Many company corporations brands amendment their logos with time to stay pace with their ever-changing business. progression may be a method of amendment or development, once one version of a product is best than the previous one.

However logos are typically seem in images/videos of planet scenes overlay on objects of the other pure mathematics, shirts of persons or boards of retailers or billboards and posters in sports fields. In most of the cases they are subjected to outlook the transformations and deformations, typically corrupted by noise or lighting effects, or partly obstructed.



II. RELATED WORKS

Early works on brand recognition and detection was totally supported automatic logo registration method, in that it will check whether the new coming logo is already present in this information if it exist it will reject to avoid confusion.

C. Constantinopoulos, E. Meinhardt-Llopis, Y. Liu, and V. Caselles, have introduced during this paper videos of low resolution image into standard type and have analyzed zero false'+' and false'-' happens only an extraordinarily degraded image, but the period is extremely slow in this method.

H. Sahbi, J.-Y. Audibert, and R. Kerivan was planned a new sort of kernel and object using context free algorithmic program for locating similarities points between 2 logos and might lead to false matches.

Y. Kalantidis, L. G. Pueyo, M. Trevisiol, R. van Zwol was projected the cluster of options in triples victimization multi scale triangulation and finally signatures were extracts. The number of triangles per category varies a lot depends on image resolution, logo complexness, but memory and recognition speed remains unaffected in signature index.

III. SYSTEM MODULE:

1)Block Diagram

The flow diagram for context dependent similarity algorithm is shown below:

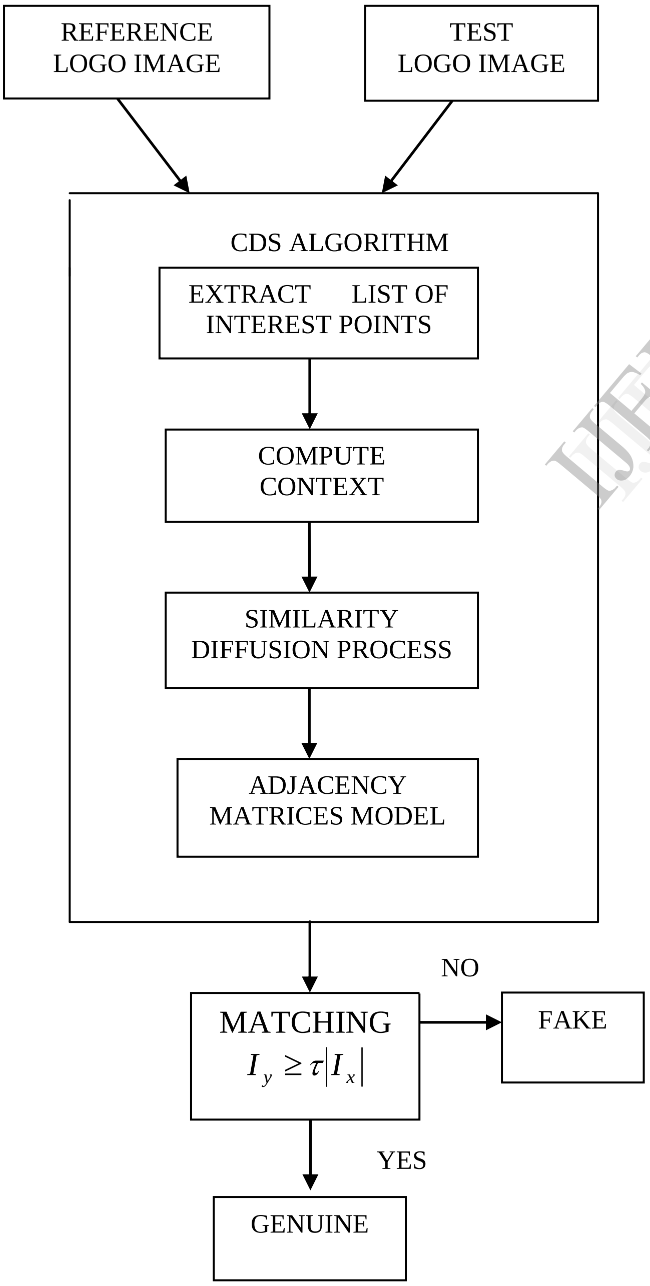


Figure shown

2)Pre-Processing

Pre-processing is a very important technique that is typically carried out to remove the noise and to upgrade the image before any operation. Four filters specifically Mean, Median,Gaussian and Weiner filters are used to remove noise here. And their Peak signal to noise magnitude relation is calculated. The image with high PSNR value is employed for any process.

(i)Mean filter:

Mean filter may be a simple spatial filter and simple to implement technique to get rid of the noise in pictures, i.e. reducing the number of intensity variation between one pixel and also the next. it is often used to filter noise in pictures.

It is a sliding-window technique that takes over the center value with the common mean of all the pixel Values within the kernel or window.

(ii)Median filter:

Median Filter may be a simple and powerful nonlinear filter. Median filter is employed for removing the number of intensity variation between 2 pixels.

Instead of merely restoring the pixel value with the mean of neighboring pixel values, it replaces it with the median of these values.

(iii) Wiener filter:

Weiner filter minimizes the noise and inverts the blurring at the same time. It reduces the mean square error within the method of inverse filtering and noise smoothing.

(iv)Gausian filter:

gaussian filters are used to blur the images and reduce noise because they need a property of supporting the time domain that is equal to the frequency domain.The gaussian filters have the minimum time bandwidth product.

The probability distribution function of the normalised variant is given by

$$g(x) = \frac{1}{\sigma\sqrt{2\Pi}} e^{-(\frac{x-\mu}{\sigma})^2 \frac{1}{2}}$$

(v) Peak Signal to Noise Ratio(PSNR):

PSNR is the ratio between maximal power of a signal and the power of distorting noise that affects the standard of its illustration so as to boost the image quality and to get rid of noise present in an image.

$$PSNR = 20\log_{10}\left(\frac{MAX_f}{\sqrt{MSE}}\right)$$

Where MAX_f is the maximum signal value that present in original known to be excellent image

The above mentioned filters produce an individual filtering output and the best maximum signal value of these filter is calculated for interest points extraction.

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3) Interest Points Extraction:

Interest point detection is a recent terminology in computer vision that refers to the detection of interest points for consequent processing. An interest point is a point that has a well-defined position in image space. The interest points are extracted using histogram method.

i)Scale Invarient Feature Transform:

Scale-invariant feature transform (or SIFT) is an algorithm in computer vision to recognize and describe local features in images. The algorithm make feature detection in the scale space and resolve the location of the feature points and the scale.

Steps for scale invariant feature transform are as follows:

•Constructing a scale space.

•Scale-space extreme value detection (Uses difference-of-Gaussian function)

•Key point localization (Sub-pixel location and scale fit to a model)

•Orientation assignment (1 or more for each key point)

•Key point descriptor (Created from local image gradients).

(a)Constructing a scale space:

This is the basic preparation. Interior representations of the original image to insure scale invariance. This is done by generating a "scale space.

(b)LoG Approximation:

The Laplacian of Gaussian is great for examine interesting points (or key points) in an image.

(c)Finding key points:

With the super-fast estimation, key points can be analyzed. These are maxima and minima in the Difference of Gaussian image.

(d)Assigning a location to the key points:

An location is calculated for each key point. Any further calculations are done corresponding to this location. This effectively cancels out the effect of location, making it rotation invariant.

4) Context:

The context is defined by the local spatial configuration of interest points in both SX and SY. regularly, in order to take into account spatial information, an interest point xi ∈ SX is defined as xi = (ψg(xi),ψf (xi),ψo(xi),ψs (xi),ω(xi)) where the symbol ψg(xi) ∈ R2 stands for the 2D coordinates of xi while ψf (xi) ∈ Rc corresponds to the feature of xi .

Let d(xi,yj) = ‖ψf (xi) − ψf (y j)‖2 measure the dissimilarity between two interest points. The context of xi is defined as in the following:

$$N^{\theta,\rho}(x_i)=\{x_j:\omega(x_j)=\omega(x_i),x_j\neq x_i\}\text{ x}$$

With

$$\frac{\rho-1}{N_r}\in_p\leq\| \ \Psi_g(x_i)-\Psi_g(x_j)\ \|_2\leq\frac{\rho}{N_r}\in_\rho$$

And

$$\frac{\theta-1}{N_a}\pi\leq\angle(\Psi_0(x_i),\Psi_g(x_j)-\Psi_g(x_i))\leq\frac{\theta}{N_a}\Pi$$

Where (ψg (xj) −ψg (xi)) is the vector between the two points coordinates ψg (xj) and ψg (xi).

5) Similarity Design:

We define k as a function which, given two interest points (x, y) ∈ SX × SY, provides a similarity measure between them. For a definite collection of interest points, the sets SX, SY are finite. Provided that we put some (arbitrary) order on SX, SY, we can view function k as a matrix K,

Let Dx,y = d(x, y) = ‖ψf (x) − ψf (y)‖2

IV. MODULE IMPLEMENTATION

The proposed system has been enforced using the subsequent context dependent similarity rule

Input : load the Test Logo image.

Output : finally getting Detected Logo image.

step-1: load the reference image and test image

step-2 :filtering process

step-3:interest point is extracted

Step-4: finding which is original and test image

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V. RESULTS AND ANALYSIS

The logo matching and recognition using context dependent similarity algorithm is analyzed and the results are shown below:

(a) Filtered image

(b)Reference image with key points mapped in it

c) test image with key point mapped in it

V) CONCLUSION

We introduced in this work a novel logo detection and localization approach based on a new class of similarities referred to as context dependent. The strength of the proposed method exists in several aspects: (i) the inclusion of the information about the spatial configuration in similarity design as well as visual features, (ii) the capability to control the influence of the context and the regularization of the solution via our energy function, (iii) the strength to different conditions including partial occlusion, makes it suitable to analysis both near-duplicate logos as well as logos with some variability in their appearance, and (iv) the theoretical roundedness of the matching framework which shows that under the hypothesis of existence of a reference logo into a test image, the probability of success for matching and detection is high.

Further extension of this work is we can use real time logos as test image for matching and recognition process. And also of this work include the application of the method to logo retrieval in videos.

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