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Logo Detection and Recognition from the Images as Well as Videos

Meera Sambhaji Sawalkar[1], Mrunalinee Patole[2]

[1]M. E. Department of Computer Engineering, Pune University, Pune, India

[2]Assistant Professor, Department of Computer Engineering, RMD Sinhgad School of Engineering, Warje Pune Pune University, Pune, India

Abstract: ***In this paper, matches and multiple instances of multiple archives quotes equality logo to identify a variation framework to conceive of innovative mastering assistance through quotes logo and test images Planetarium localized symptoms (interest points, districts, etc.) are reflected as And at least one agreed by mixing the power function: 1) is the period of a loyalty that feature a district benchmark equivalent, 2) that feature co-occurrence/geometry captures and controls the smoothness of response equal to 3) to evaluate the value of a regularization period. We put a detection/recognition method hAta and its theoretical consistency study. Finally, we through our extensive test the validity of the method show logo on demanding MICC-Dataset. In addition we methods to achieve scalability and rigid and non-rigid matching logo changes, CDS and find the closest neighbor of the SIFT process Milan and Milan extends against closest neighbor with RANSAC verification. The main aim of this project is to present the efficient and robust framework for detection as well as recognition of logo images. Below are basic objectives of this research: 1) To present the literature review over different approaches presented over logo 2) To present the analysis of different methods according to their detection accuracy and performances. 3) To present and discuss the proposed methods for logo detection and recognition. 4) To present the practical analysis of proposed work and its evaluation against the existing methods.***

Keywords: Context-dependent kernel, logo detection, logo recognition, CDS, SIFT, RANCSAC

1. Introduction

Logo or trademark recognition has been a well-studied subject for decades since it arises in many practical scenarios of modern marketing, Advertising & trademark registration. the most successful approach in an uncluttered background sketches, pictures or video taken of it to deal with recognition and recognition from the white background and television station logo includes matching logo on the video later, already can be, such as using information about logos and frame size, Or temporal correlation between. When people look to natural scenes, although they are harder to detect and image on the shirt of a soccer player for example 20 x 20 pixels can vary in shape although the generic object recognition and close-duplicate detection two related problems that largely has been studied in the last decades are Natural scenes logo recognition must fall under any category.

On the one hand, they generally are simple geometric shapes and text and most planar surfaces appear to help detect can provide some useful prior knowledge logo. On the other hand, they have a very wide range of near duplicates are comparing and take many different forms, or variants can be. global color or shape descriptors commonly recognized logo in clean environment that is used when It comes natural to images, because it is mainly they are extremely sensitive to background clutter, however, such descriptors have been successful. We study the problem consists of: a logo to the associated sections of the annotated database (or brand) and a query image (or video frame), given the task to ascertain if brands to appear in one or more query. Database class per logo consists of a relatively small number of instances; however, a large number of classes may be more than one instances per class makes detecting multiple variations that one appearance against strong forms or logos.

Context of the peculiarities of the geometry and even with acknowledgement to object localized in one scene recognition of individual things is important, and therefore difficult to address the requirements of hand needed. Relevant data image, full-grade image classification approach for spatial pyramid as apparently not justified. Object geometry of junction circulation components Fergus et al. The star forms. But from the point of view of representation with the number of components increases the complexity and number of components, the model also suggests that more than a couple of flats to be impractical in most situations becomes harder. Carneiro and Jepson suggested to assembly local image features in flexible spatial forms to improve matching correctness between images. In their approach, matched characteristics are refined by applying clustering and form verification founded on semi-local spatial constraints. Chum and Mata advised an exceptional case where characteristic appearance is disregarded and only spatial relatives between pairs of features are utilized. Pantofaru et al, object detection and the localized patches developed by dividing districts with similarities to a localization method combines. In particular, the histogram (quantized) segments of local facilities next to a district where spatial proximity of localized patch attributes used as area-based context attribute defined. Similarly, Mortensen et al, SIFT descriptors form descriptors very size reference point for district ("global context").

All of these processes vary slightly between symptoms emerge not discrimination. Bronstein and Bronstein recently of course feature descriptor to include spatial data suggested

they added circulation spatially spread out near the tightest specifications scattered from perceptive characteristics of sacks, featuring added. In particular they discovered that such couples affine invariance can occur if the affine transform and feature points are covariant canonical neighborhood. Although this approach is only represented in affine covariant and has a very high dimensionality. Responses to voluntary real-world images with clear account of localized contexts logo to find out recently were offered by some authors; among them, GAO suggested a two-stage algorithm et al, localized contexts that account key points. They considered spatial-spectral saliency to bypass the impact of cluttered backdrop and pace up the logo detection and localization. Regrettably, their answer has disclosed to be very perceptive to occlusions. Kleban et al engaged a more convoluted approach that considers association directions between common spatial configurations of quantized SIFTS characteristics at multiple resolutions [39]. As reported furthermore by the authors, a foremost limitation of this approach is image tenacity since multiple localized features are required to mine robust spatial configurations. This makes the procedure very feeble in case of small or partially occluded logos.

In this paper, we explore and acknowledgement that a description of the context-dependent ' equality is founded upon an innovative solution (CDS) kernel that exactly covers the spatial context of the localized features. Suggested procedure model-free, i.e. it is not restricted to the alignment form priorities. sift key points each lone reference work is considered with respect to and descriptions of some important Identifies the reference shape with difference: given a set of points X SIFT interest x ∈ x with respect to the set point with a specific geometric constraints spatially spread out scattered from x is characterized as close to. Formally, the CDS function is characterized as the fixed-point of three periods: (i) an power function which balances a fidelity term; (ii) a context benchmark; (iii) an entropy term. Fidelity expects to combine the most hopeful period inversely interest is proportional to Euclidean distance between points. spatial coherence alignments context of a benchmark assessment: context benchmark (FP fq report) nearly all in twos is proportional to the alignment of the tallies interest points (FP fq report) a pair of respectively a high similarity score alignment with the query and target But with a given spatial configuration of "Entropy" period with a smoothing factor, assuming a priori probability distribution, junction alignment scores flat acts as that information. It acts as regularize that controls the entropy of the dependent likelihood of equivalent, therefore the uncertainty and decision thresholds so helping to find a direct analytic answer. Using the CDS kernel, the geometric layout of local districts can be contrasted over images which display contiguous and doing again localized organizations as often in the case of graphic logos. The solution is verified to be highly effective and answers to the requirements of logo detection and acknowledgement in real world images.

2. Literature Survey

This section is for those of us in the match and several quotes to identify multiple instances of the logo are submitted are presented in various ways. The address printed logo, logo used for petty patent database searching for efficient retrieval of several publications such as. However recognition of the logo in the photos is as much attention.

A. Smeulders, m. Worring, Santini, a. Gupta, and r. Zain (2000) [1], at the end of the early years they content-based image retrieval, content-based image retrieval in paper 200 presents a review of references. Paper-based content retrieval working conditions begins with a discussion on: pattern Use of the picture, the role of semantics and sensitive ditch. Subsequent sections computational image retrieval system discussed steps step reviewed an image by color, texture, and local geometry is sorted to recover resources. Retrieval features are discussed next, sorted by: cumulative and global features the main point, object and shape features, hints, and structural combinations thereof.

Similarity of pictures and objects in pictures is reviewed for all of the types of features, in close connections to the types and means of feedbacks the user of the systems is capable of giving by interaction. They briefly discuss aspects of system engineering: databases, system architecture, and evaluation. In the concluding section, they present our view on: the driving force of the field, the heritage from computer vision, the influence on computer vision, the role of similarity of interactions, the requirements of databases, the problems of evaluation, and the role of the semantic gap.

R. Dutta, d. Joshi, j. Lee and j. z. Wang (2008) [2], image retrieval: ideas, influences, and new age trends of great interest and an emerging technology as content-based image retrieval have seen a wealth of promise while in the last decade laid the groundwork for such commitments. To add a large number of new technology and systems, met many new people, and triggered strong association weakly related fields also led the newspapers, current image retrieval and automatic image annotation major theoretical and empirical contributions to nearly 300 in the survey and in the process discuss the spawning of related sub-sectors. They also discuss all significant challenges occurred in the adaptation of available image retrieval techniques to build system that can be useful in the real world use. In retrospect of what has been achieved so far, they also conjecture what the future may hold for image retrieval research.

L Ballan, m. Bertini, a. Del Bimbo, El Seidenari, and g. Serra (2011) [3], and video of the event, to explore the meaning of research on methods to represent recognition for annotations and recognition events and actions in the video, from the scientific community a growing attention to semantic indexing intelligent video surveillance systems and advanced human-computer interaction interface to video for many applications due to its relevance. Incident detection with the appropriate features and recognition video at low levels, or with a high level model and can represent time than

classifiers need to consider the temporal aspect. In the proposed paper we survey the field of event recognition, from the interest point's detector with descriptors, to event modelling techniques and knowledge management technologies. They provide an overview of the methods, categorising them according to video production methods and video domains, and according to type of actions or events that are typical of these domain.

Wai Jing and s. baluja (2008) [4], the product image search, the newsletter page rank for the image-ranking problem "authority" nodes on the graph to identify an inferred sequence similarity in tasks and view link structure that a bunch of images can be created between the analysis proposes an algorithm for the computation of Page Rank on a walk through the process based numerical weight assigned to each image; It is believed to be its relative importance to the other images in the process of the incorporation of Visual cues in large-scale commercial use today since the majority of search engines. Commercial search-engines often solely rely on the text clues of the pages in which images are added to rank images, and these often entirely ignore the contents of the images themselves as a ranking signal. To quantify the performance of our approach in a real-world system, they conducted a series of experiments depend on the task of retrieving image for 2000 of the queries of most popular products. Our experimental results show significant improvement, in terms of user satisfaction and relevancy, in comparison to the most recent Google Image Search results.

L Ballan, m. Bertini and a. Jain (2008) [5], A system will automatically display the trademarks and technical broadcasting sporting events in US trademark evaluation of visibility of a sports marketing firm in cooperation with the aim of detecting our trademark and identity system that has been developed Show the current version of the game, videos, spread in order to identify. They propose a semiautomatic system and trademark appearances game, videos to return a human annotator trademarked time and an interface that shows the position of the detected through monitoring of the results of automatic annotation; So that the supervisor of your work fast to secure the parts of the video that a trademark has been marked as not containing can leave a good recall system for providing the data, the purpose of this is due to the fact.

A. Watve and S. Sural (2008) [6], Soccer video processing for the detection of advertisement billboards, Billboards are placed on the sides of a soccer field for advertisement during match telecast. Unlike regular commercial, these are introduced while a break, on-field billboard appears on the TV screen at uncertain time instances, in different sizes, and also for different durations. L Ballan, m. Bertini and a. Jain (2008) [5], A system will automatically display the trademarks and technical broadcasting sporting events in US trademark evaluation of visibility of a sports marketing firm in cooperation with the aim of detecting our trademark and identity system that has been developed Show the current version of the game, videos, spread in order to identify. They propose a semiautomatic system and trademark appearances game, videos to return a human annotator trademarked time and an interface that shows the position of the detected through monitoring of the results of automatic annotation; So that the supervisor of your work fast to secure the parts of the video that a trademark has been marked as not containing can leave a good recall system for providing the data, the purpose of this is due to the fact.

C. Constantinopoulos, E. Meinhardt-Llopis, Y. Liu, and V. Caselles (2011) [7], A robust pipeline for logo detection, they present a method for detecting appearance of logo contain in low-resolution videos sequence. The method is based on matching the SIFT descriptors, plus several heuristics. The logos must come from small databases of possible logo. The emphasis is not on the speed but it is on reliability, although the method can be executed in real time using a parallel computer.

C. H. V, y, w-Y. Chau, & c. T. (2009) [9], the trademark image retrieval to describe the use of synthetic features global size and internal structure, a trademark image retrieval (TIR) system in vast numbers of trademark registration system images to deal with in this work prasTavit. Proposed approach with its edge detector using extraction of edges, performs a standardization process shape, and then extracts the global and local features description of the internal details of local features. Trademark while capturing the essence of gross global features shapes a two component feature matching strategy to measure the similarity between query and database images used. The other four proposed algorithm performance comparison of algorithms.

J. Schietse, J. P. Eakins, and R. C. Veltkamp (2007) [14], Practice and challenges in trademark image retrieval, In this paper, they outline some of these main challenges today facing on trademark searcher, and discuss the extent to which current automated systems are meeting those challenges.

T. Kato (1992) [15], database architecture, content-based image retrieval for image database systems, this paper to describe Visual interaction mechanisms to interact with typical system view example. The query after the query and subjective description function a spirit again. , While the former is a sketch, similarity retrieval functions and functions again. They both have an image model and interpreting the contents of the image data from the user and to adopt a user model's viewpoint. Visual perception processes the user's user model darshAta, while image data, image model describes graphical features. These models, automatic image analysis and statistical learning, stored in relational tables created by abstract indexes to these algorithms are specified for our experimental database system, trademarks and Art Museum are developed.

R. Phan and d. Androutsos (2012) [20], voluntary color image color edge histograms gradient co-occurrence, in this paper, we present a voluntary trademark and logos colored compound to retrieve objects, paint on the edge co-occurrence histogram (CECH) provide object detection

scheme Does an algorithm using database content-based image retrieval of trademark and logo database. They have more accurate information using color edge detection statistics vector command to include the introduction of CECH, based on this difference of color images, simple color pixel edges assortment with the edges as compared to CECH looked a more accurate representation produces. Our proposed method is thus reliant on edge gradient information, and so they call it the Color Edge Gradient Co-occurrence Histogram (CEGCH). They also have a color quantization hue – saturation – value (HSV) color space, illustrating that this color quantization with CECH initially than image, a more appropriate for retrieval quantization scheme based method of CEGCH and experimental results demonstrate that. HSV color quantization scheme scaling, rotation, and is insensitive to the partial deformations, And image retrieval, high precision and recall with CECH outperforms use. They also have a closely related based on histogram color co-occurrence (CCH) algorithm to use and displays on our algorithm with high purity and also better than recall

3. Proposed Approach Framework and Design

3.1 Problem Definition

Logo recognition in these scenarios and for a number of key presentations Beach Them, some self-acting as demonstrations publications, has been reported in financial search engine on the world wide web to, thev reification of the sporting events, explore near-duplicate logo advocated improving visibility and identification of unauthorized uses of products. Special presentations of social utility in addition to the recognition of such as groceries in stores for aiding the unseeing have been described and recognition in images system to a normal logo detection took real world environment must obey with diverging needs a hand, Geometric and photometric transformations is of invariance to a large variety with all the conditions of the image video/notes need to obey.

Since in genuine world images logos are not apprehended in isolation, logo detection and recognition should furthermore be robust to partial occlusions. At the identical time, especially if we desire to find out malicious tampering or get logos with some localized peculiarities, we should further more require that the small differences in the localized organizations area apprehended in the localized descriptor and are adequately differentiating for recognition. Early work on logo detection and acknowledgement was concerned with providing some self-acting support to the logo registration method. The scheme must ascertain whether other listedlogosin archives of millions, live that have alike look to the new coming logo image, in alignment to ensure that it is adequately distinctive and bypass disarray. Existing methods assume that a logo picture is fully visible in the image, is not corrupted by noise and is not subjected to transformations. According to this, they cannot be applied to real world image which are may be corrupted by noise. Logo and acknowledgement which of course incorporates is the spatial context of the localized features a "depending on context similarity" (CDS) based on the definition of the latest kernel under interrogation process. Formally, the CDs function as three periods of real estate is characterized by: an energy function which is the remaining one term of allegiance, a standard reference period of entropy.

3.2 Proposed Architecture

This paper proposed simulation analysis of comparative and matching CDS during the nearest neighbor SIFT so that we can claim the proposed method and nearest-neighbor RANSAC verification compared with detection procedure against Milan once the existing Best as proposed by the second we consider the scalability factor. This methodology is implemented on MATLAB and performance is computed by using precision and recall rate calculations.

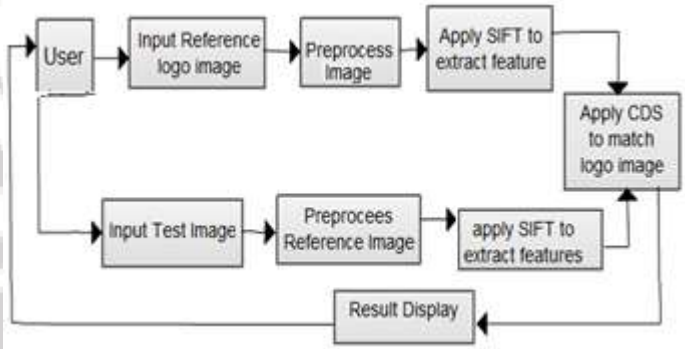

Figure 1: Proposed System Architecture

3.3 Process Flow

Returns the user input the reference image and test image detection, we first find out that you want to process both images, all the features their key points out of both finding images, and we will remove the image using SIFT features and using the features we then explore the images we object descriptors that match or logo image to detect the CDs algorithm applied.

3.4 Algorithm

CDS Logo Detection and Recognition
Input : {reference logo image : l_x Test image:l_y , CDS parameter:$\epsilon,\alpha,\tau,\beta,N_a,N_r$ }

Processes:
Extract SIFT from l_x, $l_y$and let S_x= {x_1, xn},
S_y= {y1, yn} be respectively the list of interest points taken from both images;
Step 1:
Fori=1 to n
find context matching for x_i where it is key point of referral image.
End for
Fori=1 to n
find context matching for $y_i$where it is key point of test image.
End For

Step 2: Set t=1 to max=30

Step 3:
For i=1 to n
For j=1 to m
Compute CDS matrix
Increment t i.e. does t++;
End for
End for
Repeat step 3 until t > max or convergence.

Step 4:
For i=1 to n do
For j=1 to m do
Compute$K_{yj|xi}$
Match between x_i andxjis declared only if
$K_{yj|xi} \geq \sum_{s \neq j}^{m} K_{y_s|x_i}$
Step 5: If number of matches in $S_y > \tau|S_x|$
Then logo matched i.e. detected
Otherwise
Logo not detected.

Output: A Boolean value determining whether the reference logo in l_x is detected in l_r.

4. Work Done

In this section we are presenting practical environment, dataset used, and metrics computed.

4.1. Input Dataset

Test image containing logo only and train image containing logo in image.

4.2 Hardware and Software Used

Hardware Requirements:
PROCESSOR : PENTIUM IV 2.6 GHz
RAM : 512 MB DD RAM
MONITOR : 15" COLOR
HARD DISK : 20 GB
Software Requirements:
Front End : Java
Tools Used : Net Beans
Operating System: Windows 7/8

4.3 Results of Practical Work

Following figures are showing results for practical work done. Following figure shows the main screen. That takes the input dataset,

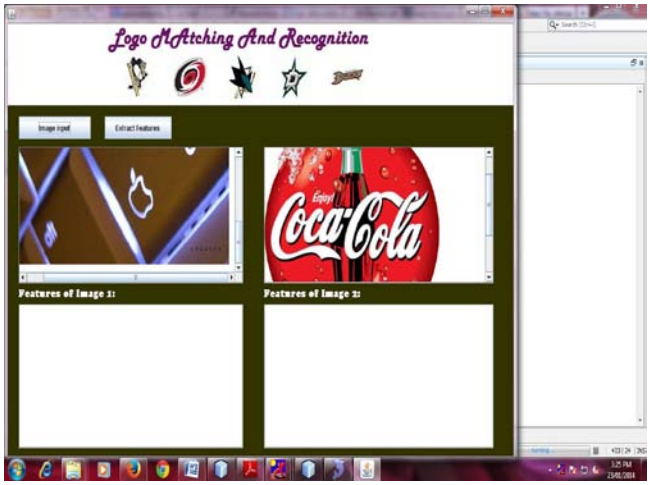

Figure 1: Take the input dataset Load input images

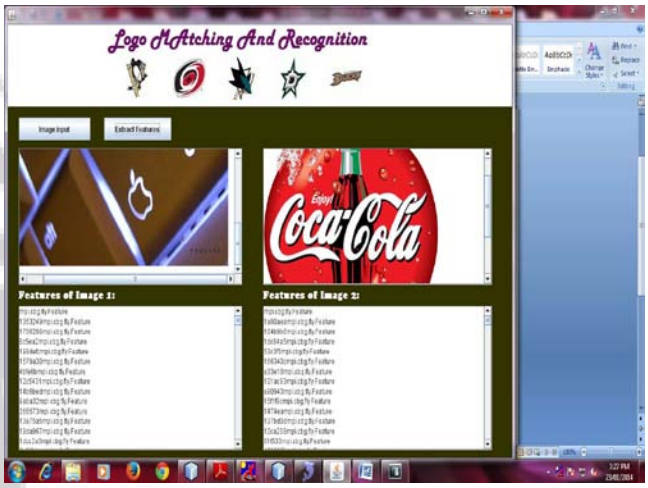

Figure 2: Extracted features of given images

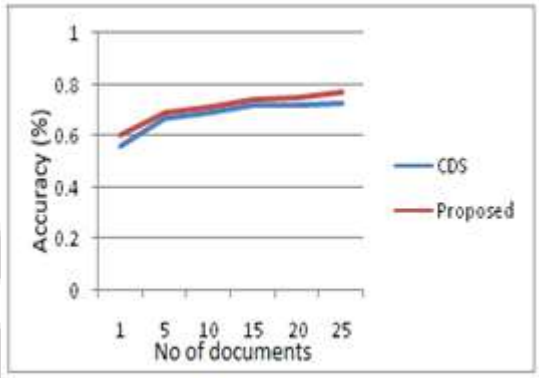

Figure 3: Performance Graph

5. Conclusion and Future Work

We have a new logo and localization approach referred to as reference likeliness reliant of a new classroom was founded on the strength of the suggested process in many aspects. First equality in addition to information about the spatial configuration that design as well as Visual characteristics, the second is command of our energy context and leverage answer by regularization ability, encompassing various aspects of the third partial occlusion tolerance, both with some flexibility in his eye to detect duplicate logo as well as the logo suitable for children, and the fourth equal theoretical equality, such as composition a roundedness check

likelihood of the idea of the existence of a quotation in the logo displays the success under equivalent and explore high. In addition we achieved scalability and other rigid and non-rigid logo changes.

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Author Profile

Mrs. Meera Sawalkar received the B.E. degree inComputer engineering from Mumbai University in 2005. She is now pursuing M.E. in Computer Engineering from department of computer Engineering at the Pune University, Pune. This author has published one review paper at international level. Her research interest includes image processing.

Prof. Mrunalinee Patole, presently working as Assistant Professor in Department of Computer Engineering, RMD Sinhgad School of Engineering, Warje, Pune.India.