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Survey on Relevant Data Retrieval

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***Abstract*— relating visual information to its linguistic semantic meaning remains the challenging area of research. The semantic meaning of images depends on the presence of objects, their attributes and their relations. In this project, I propose studying semantic information in images. We thoroughly analyse the data set to discover semantically important features, the relations of words and methods for measuring semantic similarity. We study the quality of particular objects and their semantic importance. We have integrated word net for searching all possible synonyms for the keywords given. Hence search efficiency, accuracy shall be improved. Our aim of the project is to increase the search accuracy and relevancy of search data.**

***Index Terms*—Semantic scene understanding, linguistic meaning, saliency, memorability, abstract images.**

INTRODUCTION

A fundamental goal of computer vision is to discover the meaningful information contained within an image. Images contain a vast amount of knowledge including the presence of various objects, their properties, and their relations. Even though "an image is worth a thousand words" humans still possess the ability to detect particular content and summarize an image using only one or two sentences. Similarly humans may find two images as semantically similar, even though the arrangement and presence of objects may vary dramatically. Discovering the subset of image specific information that is salient and semantically meaningful remains a challenging area of research numerous works have explored related areas, including the locations in an image [1], [2], ranking the relative importance of visible objects [4], [5], [6] and images [7], [8], [9], [10]. Semantic meaning also relies on the understanding the attributes of the visible objects [11], [12] and their relations [7], [13].Unfortunately progress in this direction is restricted by our limited ability to automatically. The proposed question "Is photorealism necessary for the study of semantic understanding?" To prove this Header and Simmer [14] demonstrated the ability of humans to provide even simple objects such as triangles and circles with the emotional traits of humans [15]. Novel methodology is used for studying semantic understanding. Unlike traditional approaches that use real images, so proposing that the same information can be learned from abstract images rendered from a collection of clip art, as shown in Fig. 1 When image is described, many objects, attributes and relations are left unmentioned, while others are invariably described. Among other factors, quality plays an active role in checking particular image. Previously, many papers have explored low level cues for finding salient [1], [16] and memorable [17] regions in an image. However particular quality are also

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dependent on high-level cues [18], such as the presence and relation of objects. Using abstract images, these high-level cues may be directly studied to gain insights into their contribution to saliency and memorability, and their relation to semantic importance.

The use of false images provides two main advantages over real images. First, the difficulties in detecting or hand-labeling relevant information in real images can be avoided. Labeling the huge set of objects, their properties and relations in an image is beyond the capabilities of state-of-the-art automatic approaches, and makes hand labeling expensive and tedious. Hand-labeling in many instances is very ambiguous. Using conceptual images, even complex relation information can be easily computed given the relative placement of the clip art.

Second, it is possible to generate novel abstract images. One scenario explored in this paper is the generation of similar scenes. This accomplished by asking human subjects to generate novel scenes and corresponding written descriptions. Second, it is possible to generate novel abstract images. One scenario explored in this paper is the generation of similar scenes. This accomplished by asking human subjects to generate novel scenes and corresponding written descriptions. The result is a set of different scenes with similar semantic meaning, as shown in Fig. 1. Collecting analogous sets of similar real images would be difficult. Another scenario for using sets of related abstract images is studying object saliency. By analyzing human subjects the addition or removal of an object from an image we may determine a particular object. Numerous other scenarios also exist including object importance of object relations and scene memorability.

Our main contribution is to develop new methodology for studying semantic information using abstract images. We visualize this to be useful for studying a wide variety of tasks, such as generating semantic descriptions of images, text based image search, or detecting salient objects. The dataset and code are publicly available on the first author’s webpage.

We measure the mutual information (MI) between visual features and the semantic classes to discover which visual features are most meaningful. Our semantic classes are defined using sets of similar scenes depicting the same written description.

Here the relationship between words and visual features are described. Interestingly, the part of speech for a word is related to the type of visual features with which it shares the mutual information (e.g. prepositions are related to relative position features).The information provided by various types of visual features in predicting the similarity. The relation between semantic importance, saliency and memorability of objects are studied here. While these concepts are related, they still provide complementary information. Objects of high semantic importance are not always memorable.

Through our various experiments, has shown what aspects of the scenes are visually salient and semantically important. The hypothesize that analyzing semantic importance and high-level

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visual salience in abstract images, may get better understanding for what information needs to be gathered for all types of visual data, including real images.

RELATED WORK

Numerous papers have explored the similar understanding of images. Most relevant are try to predict a written description of a scene from image features [7], [8], [9], [10]. These methods use a variety of approaches. For instance, methods generating sentences rely on the automatic detection of objects [20], attributes [11], [12], [21], and use language statistics [9] or spatial relationships [10] for verb prediction. Sentences also assigned to all images by selecting a complete written description from a large set [7], [8]. Learning semantic attributes [11], [12], [21] becomes a popular challenge for enabling humans and machines to communicate using natural language. The use of similar concepts such as scenes and objects has also been shown to be effective for video retrieval [22] and natural language generation from the video [23], [24], [25], [26]. Several datasets of images with multiple sentence descriptions exist [27], [28], and [29]. However, our dataset has the unique property of having sets of similar images, i.e., having multiple images per sentence description. Our scenes are fully annotated, unlike previous datasets that have limited visual annotation [27], [28], [30].

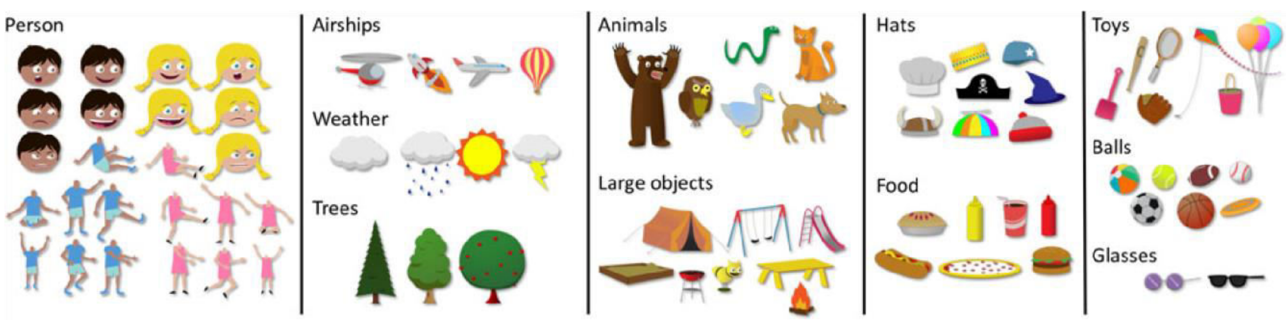

Fig. 1. An illustration of the clip art used to create the children (left)
And the other available objects (right.)

Linking visual images to different parts of speech. Several works have visual recognition Of different parts of speech. Nouns are most commonly collected [5], [31] and studied part of speech. Many methods use tagged objects in images to predict important objects directly from visual features [4], [5], [6], and to study the properties of popular tags [5], [6]. The works on attributes described the use of adjectives as well as nouns relating to parts of objects. Prepositions as well as adjectives are explored [13] using 19 comparative relationships. The authors in [33] and [34] study the relationships of objects, which typically convey information relating to more active verbs. In our work, we explicitly identify which types of visual features are informative for different parts of speech.

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Computational models of visual quality have a rich history [1]. Approaches have ranged from early models which used features inspired from attentional mechanisms [1] to object driven saliency [35]. Human gaze or fixation has been used as a proxy for attention in natural behavior. Recent works have sought to predict these fixations for image regions [16] and objects [36]. Both top down and bottom up models exist. A comprehensive evaluation of the state of the art is beyond the scope of this paper. We refer the reader to an evaluation [37] for the same. In contrast to previous works, we are interested in a more high-level notion of saliency that quantifies the extent to which an object is noticed and remembered by human subjects.

The order in which people likely to name objects in an image was studied in [5], while [6] predicted which objects, attributes, and images are likely to be described. The scale and location of an image is related to the order in which a user tags the object in an image. This information may be exploited for improved image detection [39] and image retrieval [4]. This work do not explore the order in which objects are mentioned in an image. However, this would be an interesting area for future research using abstract images.

Memorability. People have been shown to have a remarkable ability to remember particular images in long-term memory. Standing [40] demonstrated this ability for images of every day scenes, objects or events, while [41] explored shapes of arbitrary forms. Our memory does not simply include the gist of the picture, but also a detailed representation allowing us to identify which precise image we saw [41], [42]. As most of us would expect, image memorability depends on the user context and is likely to be subject to some inter-subject variability [43]. However, Iola et al. [17] found that despite this expected variability, there is also a large degree of agreement between users. This suggests that there is something intrinsic to images that make some more memorable than others. Iola et al. quantified the memorability of individual images in [17] and then identified semantic characteristics of images that make them memorable in [18]. Works have since looked at modifying the memorability of face images [44] and identifying regions in images that make them memorable [45]. Studying the contribution of different semantic features (e.g. presence, locations, attributes, concurrences of objects, etc.) to memorability would go a long way in understanding memorability. Unfortunately, curating or modifying real images to reflect minor perturbations in these semantic features is not feasible. Abstract images provide promising platform for such in depth analysis. In this paper, we explore whether the presence of certain objects contributes to the memorability of an image. A discussion of different models of memory retrieval [46], [47], [48] and formation [49] are beyond the scope of this paper.

High-level image properties. Many other photographic properties have been studied in the literature such as photo quality [50], saliency [1], attractiveness [51], composition [52], [53], color harmony [54], aesthetics [55] and object importance [5]. In this work we study semantic importance, saliency and memorability of objects, and the relationships of these high-level concepts with each other. Synthetic images and data have been used to advance computer vision in a variety of ways including evaluating the performance of tracking and surveillance algorithms [56], training classifiers for pedestrian detection [57], human pose estimation [58], learning where to grasp objects [59], evaluating image features for matching patches [60], etc. In this paper, we expand upon Zanuck and Parikh [61] to further explore the use of abstract images for measuring both object saliency and memorability. The related work of Zanuck et al. [62] models the mapping between language and visual features to automatically synthesize abstract images corresponding to input textual descriptions.

EXISTING SYSTEM

The existing system is a keyword based search engine where accuracy and relevancy is missing. No semantic based similarities is implemented in the existing system. The work of Lieberman et al split the set of spatial relationships that can exist in a scene into five unique types and study the relationships of objects, which typically convey information relating to more active verbs, such as “riding” or “playing”. Also in existing system if a large sentence is given accuracy falls down.

Many image search engines such as Google and Bing have relied on matching information of the images against queries given by users. However, text-based image retrieval suffers from essential difficulties that are caused mainly by the incapability of the associated text to appropriately describe the image content. Christo Ananth et al. [3] discussed about a method, this scheme investigates a traffic-light-based intelligent routing strategy for the satellite network, which can adjust the pre-calculated route according to the real-time congestion status of the satellite constellation. In a satellite, a traffic light is deployed at each direction to indicate the congestion situation, and is set to a relevant color, by considering both the queue occupancy rate at a direction and the total queue occupancy rate of the next hop. The existing scheme uses TLR based routing mechanism based on two concepts are DVTR Dynamic Virtual Topology Routing (DVTR) and Virtual Node (VN). In DVTR, the system period is divided into a series of time intervals. On-off operations of ISLs are supposed to be performed only at the beginning of each interval and the whole topology keeps unchanged during each interval. But it has delay due to waiting stage at buffer. So, this method introduces an effective multi-hop scheduling routing scheme that considers the mobility of nodes which are clustered in one group is confined within a specified area, and multiple groups move uniformly across the network.

Disadvantage

Searching Result Is Highly Diverse. Visual Pattern Not Clear. Classification Problem When Identify Whether Each Relevant or Not. In Existing System There Is Lack Of Accuracy And Relevancy. There Is No Semantic Based Search Is Been Implemented.

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PROPOSED SYSTEM

Since there is lack of availability of abstract images, we are using real images for processing. To extent the research we propose to implement semantic based search in web URL's also by various datasets in various categories.

The proposed method uses images for three purposes

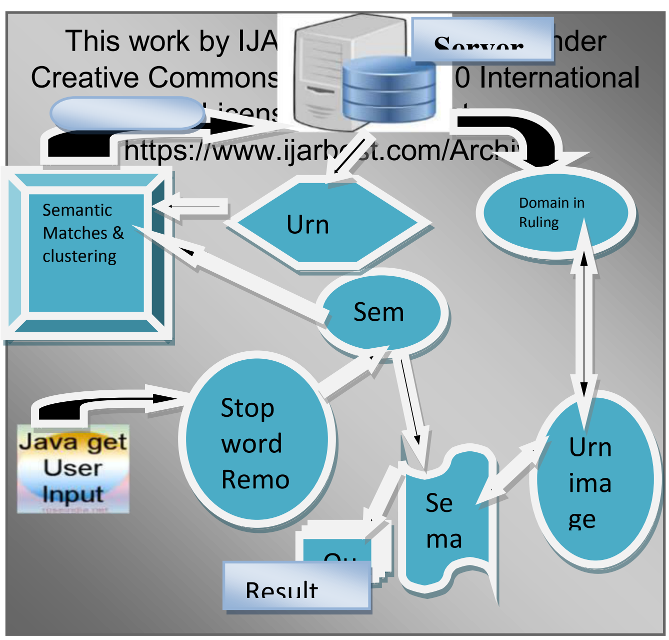
1. To make set of similar semantic words
2. With use of saliency, we can relate many words.
3. The memorability of the picture has strong impact in our mind.

Proposed to refine text-based search results by exploiting the visual information contained in the images. After a query "baby" is submitted, a result is obtained via a text-based search engine. It is observed that text-based search often returns "inconsistent" results.

Advantage

The same complex relationships that exist in natural scenes, and additional data sets may be generated to explore new scenarios. Future research on high-level semantics will be easy to focus on the problems related to the occurrence and relations between visual phenomena. Search accuracy and relevant meaning based images are only shown.

SYSTEM DESIGN



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IMPLEMENTATION

Web Image Search Re-Ranking

Web image search re-ranking is one of the techniques for automotive boosting of retrieval precision. The basic functionality is to reorder the retrieved multimedia entities to achieve the optimal rank list by exploiting visual content in a second step. In particular the initial list of multimedia entities is returned using the text-based retrieval scheme. The most Relevant results are moved to the top of the list while the less relevant ones are reordered to the lower ranks. The overall search precision at the top ranks can be enhanced dramatically. According to the statistical analysis model the existing re-ranking approaches can roughly be categorized into three categories including the clustering based, classification based and graph based methods

Image Annotation

The annotation methods is to attach textual labels to un-annotated images or the unlabelled images, as the descriptions of the content or objects in the images. The final goal of image annotation is to perform image retrieval by providing users with a text based interface for search. The image annotation exist in our lives is not possible to annotate them by hand. And annotation is potential and promising solution to this problem precisely. The ability to annotate images based on the objects that they contain is essential in image retrieval as it provides the mechanism to take advantage of existing text retrieval systems.

Image Retagging Approach

The high-level meanings can be associated into images or image regions through image tagging known as captioning or annotations. Tagging improves the content of images and helps image retrieval search engines for better images in response to text queries. For this word net is been integrated. Images can be tagged with a variety of descriptions, keywords and structured metadata. While image tags are a set of keywords then the metadata will be the structured way of expressing the descriptions.

Hyper graph distance measure

HDM stands for Hyper graph Distance Measure Algorithm. Web image search re-ranking is techniques for automotive boosting of retrieval precision. The functionality is to reorder the retrieved multimedia entities to achieve the optimal rank list. In particular the initial list of multimedia entities is returned using the image-based retrieval scheme. The most relevant results are moved to the top of the list while the less relevant ones are reordered to the lower ranks. The overall search precision at the top rank list can be enhanced dramatically.

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Matching module

Matching Module takes SPARQL query as input from the Query Engine and executes the same on the Semantic Knowledge Base to retrieve the most related images. If the query results in successful search, the output images are passed to ranking module for result ranking.

Ranking module

Ranking module is responsible to rank the images according to relevance with the user query. The resultant image set passed by Query Matching Module contains image and matching value (which is calculated as a sum of matched semantic concepts with reference to user query); the result set is sorted in descending order according to the matching value. After sorting is done top ten images are displayed to the user (i.e. most matched images are showed first) and then the remaining are displayed on user request in the decreasing order.

Algorithm

Hyper-graph Distance Measure Algorithm

Step 1:-Select the image (I) from the Data-Base (D) based on user input.

Step 2:-First, Perform to the create the histogram (H) of input image.

Step 3:-Same as step 2, system generate histogram of database images (D1.Dn).

Step 4: Compare That Histogram by using Distance Measure algorithm. Distance measure algorithm plot the input query VC output image histogram.

Step 5:-Finding the nearest relevancy on the image histogram by step 4 output.

Step 6:-Classify the images of step 5 result.

Step 7:-Remove redundant reference classes and outlier images.

Step 8:-All the result of above steps are ranked by re-ranking algorithm.

CONCLUSION

Semantic Content Based Image Retrieval system applied to comic books. The final aim would be to provide a complete system that would be able to (1) retrieve resources similar to a query, based on the amount of mutual properties they share and the significance of these properties guided by the user relevance feedback, and (2) explain to the user why a returned resource is considered to be relevant to the query.

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