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SEMANTIC IMAGE SEARCH ENHANCEMENT

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ABSTRACT

The project on Semantic Image Search Enhancement aims to revolutionize the way users interact with visual information by significantly improving the efficiency, accuracy, and user-friendliness of image search processes. In a world where images are an integral part of communication and information retrieval, traditional keyword-based search systems often fall short in delivering relevant results, especially when users seek to convey their search intentions with nuanced or imprecise language.This project seeks to bridge the semantic gap by incorporating advanced deep learning models, natural language processing techniques, and context-aware algorithms. It enables users to express their image search queries in natural language, recognizes the semantic content of images, and offers contextually relevant results. Furthermore, it leverages visual recognition and similarity measures to find images that visually match a given query, allowing users to discover related content seamlessly.Incorporating personalization features, the system tailors search results to individual user preferences and behaviors, enhancing user satisfaction and engagement. Content moderation is a critical component to ensure that search results align with ethical guidelines and safety standards, offering a safe and appropriate search experience.The project's future scope is expansive, with potential applications in e-commerce, education, healthcare, art authentication, and beyond. As technology advances and user needs evolve, semantic image search enhancement remains at the forefront of innovative information retrieval systems, promising to make visual content more accessible and relevant than ever before.

I. INTRODUCTION

Data leakage is the unauthorized transmission of sensitive data or information from within an organization to an external destination or recipient. Sensitive data of companies and organization includes intellectual property, financial information, patient information ,personal credit card data, and other information depending upon the business and the industry.

In the course of doing business, sometimes sensitive data must be handed over to supposedly trusted third parties. For example, a hospital may give patient records to researchers who will devise new treatments. Similarly,

a company may have partnerships with other companies that require sharing customer data. Another enterprise may outsource its data processing, so data must be given to various other companies. We call the owner of the data the distributor and the supposedly trusted third parties the agents. Our goal is to detect when the distributor‘s sensitive data has been impossible to identify the agent that leaked the data. We consider applications where the original sensitive data cannot be perturbed. Perturbation is a very useful technique where the data is modified and made ―less sensitive‖ before being handed to agents. For example, one can add random noise to certain attributes, or one can replace exact values by ranges. However, in some cases it is important not to alter the original distributor‘s data. For example, if an outsourcer is doing our payroll, he must have the exact salary and customer bank account numbers. If medical researchers will be treating patients (as opposed to simply computing statistics), they may need accurate data for the patients. Traditionally, leakage detection is handled by watermarking, e.g., a unique code is embedded in each distributed copy. If that copy is later discovered in the hands of an unauthorized party, the leaker can be identified. Watermarks can be very useful in some cases, but again, involve some modification of the original data.

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Furthermore, watermarks can sometimes be destroyed if the data recipient is malicious. In this paper we study unobtrusive techniques for detecting leakage of a set of objects or records. Specifically, we study the following scenario: After giving a set of objects to agents, the distributor

discovers some of those same objects in an unauthorized place. (For example, the data may be found on a web site, or may be obtained through a legal discovery process.) At this point the distributor can assess the likelihood that the leaked data came from one or more agents, as opposed to having been independently gathered by other means. Using an analogy with cookies stolen from a cookie jar, if we catch Freddie with a single cookie, he can argue that a friend gave him the cookie. But if we catch Freddie with 5 cookies, it will be much harder for him to argue that his hands were not in the cookie jar. If the distributor sees ―enough evidence‖ that an agent leaked data, he may stop doing business with him, or may initiate legal proceedings. In this paper we develop a model for assessing the ―guilt‖ of agents. We also present algorithms for distributing objects to agents, in a way that improves our chances of identifying a leaker. Finally, we also consider the option of adding ―fake‖ objects to the distributed set. Such objects do not correspond to real entities but appear realistic to the agents. In a sense, the fake objects acts as a type of watermark for the entire set, without modifying any individual members. If it turns out an agent was given one or more fake objects that were leaked, then the distributor can be more confident that agent was guilty.

II. LITERATURE SURVEY

Title: Show and Tell: Lessons learned from the 2015 MSCOCO Image Captioning Challenge
Author: Oriol Vinyals, Alexander Toshev, Samy Bengio, Dumitru Erhan
Abstract: The 2015 MSCOCO Image Captioning Challenge was a significant event that brought together researchers and practitioners from computer vision and natural language processing to address the complex task of generating descriptive and coherent textual captions for images. This challenge provided a standardized dataset, the Microsoft Common Objects in Context (MSCOCO), which includes a diverse set of images paired with multiple human-generated captions. The competition aimed to evaluate and improve algorithms capable of understanding and describing visual content in a human-like manner.

Title: Learning to Rank Image Tags with Limited Human Resources
Author: Lin Gu, Houdong Hu, Zengfu Shi, Weiming Hu
Abstract: The task of ranking image tags is crucial for improving image search, organization, and accessibility. However, the process of annotating images with relevant tags often relies heavily on substantial human input, which can be costly and time-consuming. "Learning to Rank Image Tags with Limited Human Resources" addresses this challenge by exploring methodologies that leverage machine learning to optimize the ranking of image tags while minimizing the need for extensive human intervention.
Title: Zero-Shot Learning in Modern NLP
Author: Sebastian Ruder, Piotr Stanczyk, Anssi Yli-Jyra
Abstract: Zero-Shot Learning (ZSL) in modern Natural Language Processing (NLP) represents a transformative approach that enables models to understand and generate responses for tasks they were not explicitly trained on. Unlike traditional supervised learning paradigms that require extensive labeled data for each task, ZSL leverages pre-trained models and generalized knowledge to perform tasks with no specific task-related training examples.
Title: Visual Semantic Role Labeling: A Benchmark and Analysis
Author: Mohit Bansal, Kevin Gimpel, Karen Livescu
Abstract: Visual Semantic Role Labeling (v-SRL) is an advanced task in the intersection of computer vision and natural language processing, aimed at understanding the roles of objects and their

relationships within an image. This task extends beyond traditional object detection and image captioning by focusing on the semantic roles that objects play in various contexts, akin to the semantic role labeling in linguistic analysis but applied to visual data.

This paper presents a comprehensive benchmark and analysis of v-SRL, establishing standardized datasets and evaluation metrics to facilitate and measure progress in this emerging field. The benchmark includes a rich dataset annotated with detailed semantic roles, capturing complex interactions and relationships between objects in diverse scenes.

III. SYSTEM ANALYSIS & DESIGN

EXISTING SYSTEM

Image search Reranking is an effective approach to refine the text-based image search result.

Most existing Reranking approaches are based on low-level visual features

The existing visual Reranking methods can be typically categorized into three categories as the clustering based, classification based and graph based method

DISADVANTAGES

- Keyword Dependency: Many existing systems still heavily rely on keywords or tags for image indexing and retrieval. This approach is limited by the accuracy of user-generated or pre-assigned keywords, which may not capture the full semantic context of an image.
- Inaccurate Semantic Understanding: While some systems claim to offer semantic search capabilities, their ability to accurately understand and interpret the semantic content of images remains limited. They may struggle with complex or abstract concepts.
- Scalability Issues: As image databases grow in size, some existing systems may face scalability challenges, leading to slower search times and reduced efficiency in handling large volumes of images.

PROPOSED SYSTEM

Proposed to refine text-based search results by exploiting the visual information contained in the images. Graph based methods have been proposed recently and received increasing attention as demonstrated to be effective. The multimedia entities in top ranks and their visual relationship can be represented as a collection of nodes and edges.

After a query ―baby‖ is submitted, an initial result is obtained via a text-based search engine.

It is observed that text-based search often returns ―inconsistent‖ results.

The experimental results demonstrate superiority of the proposed attribute- assisted reranking approach over other state-of-the-art reranking methods and their attribute-assisted variants.

Then the re-ranked result list is created first by ordering the clusters according to the cluster conditional probability and next by ordering the samples within a cluster based on their cluster membership value. In [24], a fast and accurate scheme is proposed for grouping Web image search results into semantic clusters. It is obvious that the clustering based reranking methods can work well when the initial search results contain many nearduplicate media documents. proposed a semi- supervised framework to refine the text based image retrieval results via leveraging the data distribution and the partial supervision information obtained from the top ranked images

ADVANTAGES

- The advantage of hypergraph can be summarized that not only does it take into account pair wise relationship between two vertices, but also higher order relationship among three or more vertices containing grouping information.
- Regularized logistic regression trained for each attribute within each class.as attribute features are formed by prediction of several classifiers, semantic description of each image might be inaccurate and noisy.

SYSTEM ARCHITECTURE

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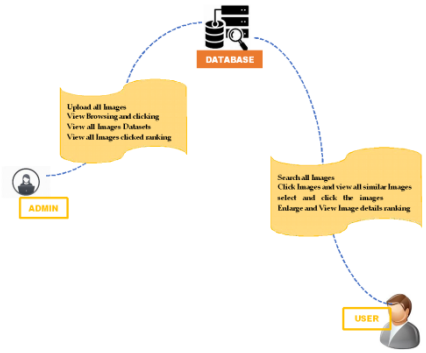


Fig. SYSTEM ARCHITECTURE

IV. IMPLEMENTATION

MODULES

- Admin
- UserRe-ranking Chart

MODULE DESCRIPTION

Admin:- In this module, the Admin has to login by using valid user name and password. After login successful he can do some operations such as upload images, view uploaded images, view the searching history, view all image ranking and view all users, search images and logout.

Search History: -This is controlled by admin; the admin can view the search history details. If he clicks on search history button, it will show the list of searched user details with their tags such as user name, user searched for image name, time and date.

Rank of images: - In user's module, the admin can view the list of ranking images. If admin click on list of ranking images, then the server will give response with their tags image and rank of image.

Upload Images: - In this module, the admin can upload n number of images. Admin want to upload new image then he has enter some fields like image name, image color, image description, image type, image usage, browse the image file and upload. After uploading successfully he will get a response from the server. Initially new uploaded image rank is zero. After viewing that image rank will re-rank.

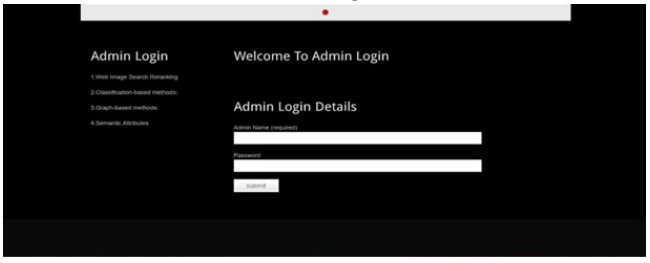
User:- In this module, there are n numbers of users are present. User should register before doing some operations. And register user details are stored in user module. After registration successful he has to login by using authorized user name and password. Login successful he will do some operations like view my details, search images, request secrete key and logout. The user click on my details button then the server will give response to the user with all details such as user name, phone no, address, e mail ID and location. Before searching any images user should request a secrete key to admin, then the admin will generate a secrete key for particular user and send to the user. After getting a secrete key user can search the images base on query and field like image name, image color, image usage and image type. And server will give response to the user, then that image rank will be increased.

Re-ranking chart:- In this module, we can view the image Re-ranking chart for all the images. This chart shows the re-ranking images in the form of PI diagram with the image name and image color. After viewing the images, rank will be increased and the re-ranking Pi diagram chart will increased based on the number of views.

V. SCREENSHOTS

Home Page

Admin Login



Admin uploads Images

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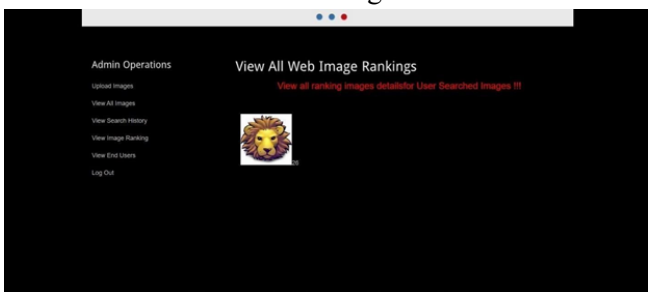
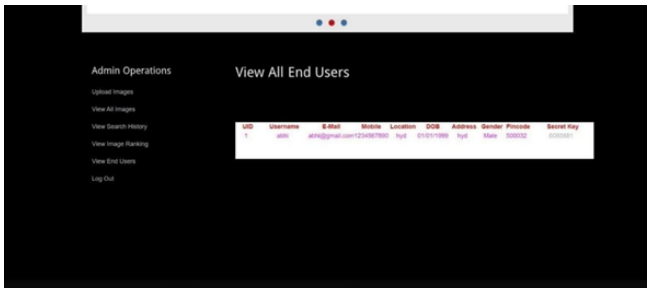
View Search History

View All Images



View All Users



User Login

User Login

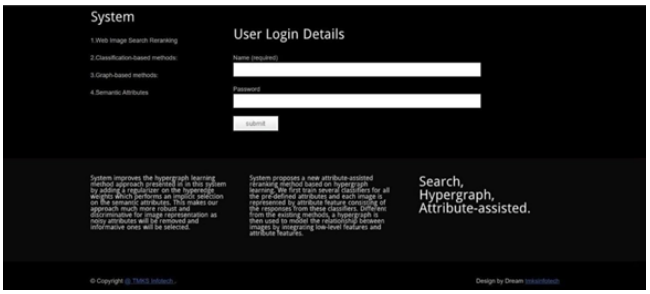


Image Search

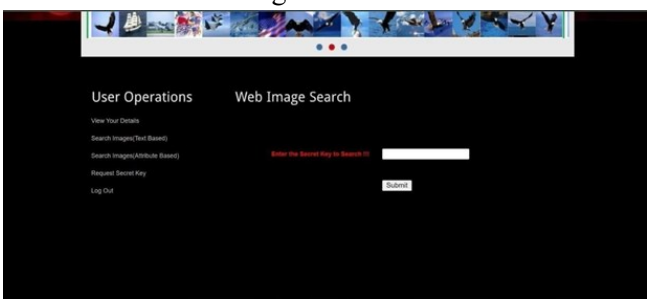


Image Search Based On Name

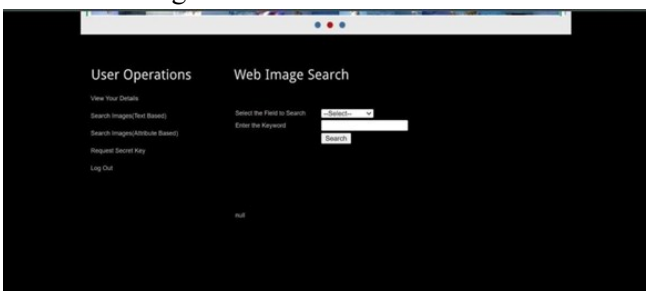
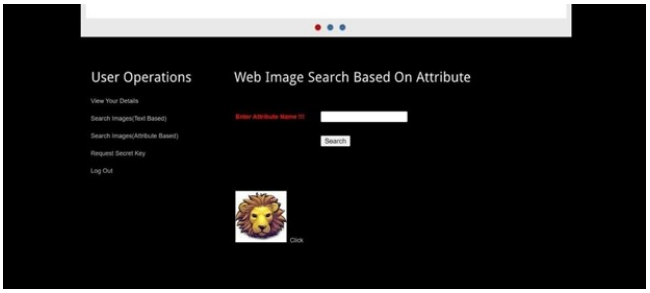
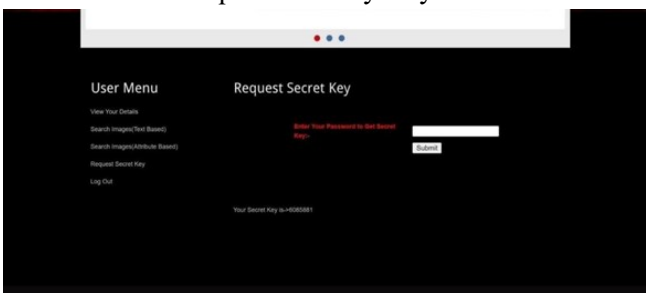


Image Searcch Based on Attribute



Request Security Key



VI. CONCLUSION

CONCLUSION

Image search re ranking has been studied for several years and various approaches have been

developed recently to boost the performance of text-based image search engine for general queries. This paper serves as a first attempt to include the attributes in re ranking framework. We observe that semantic attributes are expected to narrow down the semantic gap between low-level visual features and high-level semantic meanings. Motivated by that, we propose a novel attribute assisted retrieval model for re ranking images. Based on the classifiers for all the predefined attributes, each image is represented by an attribute feature consisting of the responses from these classifiers. A hyper graph is then used to model the relationship between images by integrating low-level visual features and semantic attribute features. We perform hyper graph ranking to re-order the images, which is also constructed to model the relationship of all images. Its basic principle is that visually similar images should have similar ranking scores and a visual- attribute joint hyper graph learning approach has been proposed to simultaneously explore two information sources. We conduct extensive experiments on 1000 queries in MSRA-MM V2.0 dataset. The experimental results demonstrate the effectiveness of our proposed attribute assisted Web image search re ranking method.

FUTURE SCOPE

The future scope for the project focused on semantic image search enhancement is expansive, driven by ongoing technological advancements and evolving user needs. Here are some potential future directions and areas of growth for this project:

- Enhanced Deep Learning Models: Continued advancements in deep learning and computer vision will lead to more sophisticated models for semantic image understanding. Future systems can benefit from state-of-the-art neural networks, enabling even finer-grained object and context recognition.
- Semantic Video Search: Extending the project to support semantic video search will be a natural progression. This will require algorithms that can analyze and index video content, making it searchable based on its semantic elements.

REFERENCES

1. L. Yang and A. Hanjalic. Supervised reranking for web image search. In Proceedings of ACM Conference on Multimedia, 2010.
2. X. Tian, L. Yang, J. Wang, Y. Yang, X. Wu and X.-S. Hua. Bayesian video search reranking. Transaction on Multimedia, vol. 14, no. 7, pp. 131-140, 2012.
3. F. Shroff, A. Criminisi and A. Zisserman. Harvesting image databases from the web. In Proceedings of the IEEE International Conference on Computer Vision, 2007.
4. B. Siddiquie, R.S.Feris and L. Davis. Image ranking and retrieval based on multi-attribute queries. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2011.
5. A. Farhadi, I. Endres, D. Hoiem and D. Forsyth. Describing objects by their attributes. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2009.
6. N. Kumar, A. C. Berg, P. N. Belhumeur and S. K. Nayar. Attribute and simile classifers for face verification. In Proceedings of the IEEE International Conference on Computer Vision, 2009.
7. M. Wang, L. Yang and X.-S. Hua. MSRA-MM: Bridging research and industrial societies for multimedia information retrieval, 2009.
8. K. Jarvelin and J. Kelkalainen. IR evaluation methods for retrieving highly relevant documents. In Proceedings of ACM SIGIR conference on Research and Development in Information Retrieval, 2000.
9. W. H. Hsu, L. S. Kennedy and S.-F. Chang. Video search reranking via information bottle principle. In Proceedings of ACM Conference on Multimedia, 2006.
10. Y. Huang, Q. Liu, S. Zhang and D. N. Meta as. Image retrieval via probabilistic hypergraph ranking. In Proceedings of the IEEE Conference on Computer Vision and

Pattern Recognition, 2010.

11. C. Lampert, H. Nickisch and S. Harmeling. Learning to detect unseen object classes by between-class attribute transfer. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2009.