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# "Semantic Trademark Retrieval System Based on Conceptual Similarity of Text with Leveraging Histogram Computation for Images to Reduce Trademark Infringement"

**[1]Mr. Pramod Dhamdhere**
[1]PHD Student, Dr. APJ Abdul Kalam University,Indore,MP, India.
Computer science and engineering
pramod.dhamdhere03@gmail.com

**[2]Dr. Dr.Rajeev Vishwakarma**
[2]Guide, Pro vice-chancellor of Dr. APJ Abdul Kalam University,Indore,MP, India.

***Abstract***: *A trademark distinguishes your business's goods or services from others'. Symbols, logos, titles, etc. can be trademarks, so they must be protected. This research deciphers trademark hypotheses when two or more have the same semantic implant. State-of-the-art semantic algorithm to similitude trademarks in hypothetic parallelism. Search and indexing established similarity distance utilizing data similarity. The proposed reflow technique is confirmed using a trademark database and a corporate names database. The conceptual comparison of written works that share a comparable domain, use similar concepts, or communicate similar ideas has been explored extensively. Existing trademark search engines are generally text-based. Measure the algorithm's accuracy in different domains.*

***Keywords: Feature Extraction, Text, Image Retrieval, Histogram, Framework Design Analysis***

## INTRODUCTION

A trademark generally refers to a brand or a logo. Trademark registration can also be obtained for a business name distinctive catch phrases, tag line or captions. Properly used and promoted a trademark may become the most valuable asset of a business. Trademarks such as Coca-Cola, HP, Canon , Nike, Adidas, puma and many more serve as an indication origin of the goods as well as an indication of quality. It is also essential to obtain trademark registration for the business name or trade name under the trademarks act. Registration of company or business name under the companies are does not itself give protection against others who might commence using identical or similar marks. A trademark is any unique expression related to a product or service that distinguishes it from others. A trademark can be a visual symbol which may be a word, a name, a device, label or numerals used by a business to distinguish it from other goods of different business. The system will be scalable across multiple platforms and will provide more reliability due to its efficiency and robustness. Early days whenever the inventors invented a trademark they have to go to the offices to get the patent on the trademark before checking whether the given trademark is existing or not .It was very difficult for the inventors to understand the problem as early as possible. Due to this problem lot of time is wasted in going to get the patent and also the duplicity of the trademarks increased. So to overcome these problems
Semantic retrieval by data similarity of trademarks system is proposed.

Digitized images are retrieved. Sorting a huge image database; digitized images are retrieved. Large databases sort images by text, color, and shape. Combining CBIR features produces relevant visuals. A typical CBIR system extracts and displays pictures as m-dimensional feature vectors. This vector database comprises database images. Most desired systems employ color and form to match photos to collection and test dataset elements. We introduce HSV color space and form coupling using through wavelet methods.

Multimedia uses visuals. Information systems help entertainment, creativity, business, engineering, and science. Relevant themes have photo libraries and image searches. Bi-dimensional images; Preset rectangular arrays hold pixels. Each photo pixel has lighting and color information. Photos depict the viewpoint of surfaces. Phone cameras, scanners, digital cameras, mobile cameras, and internet multimedia are increasing photo collections. This requires searching and retrieval.

### Feature Extraction

High-level and low-level picture characteristics are distinguished. Color and shape features make a database. Databases are used to measure similarity. CBIR Systems includes:

**Acquisition-** Acquire images using digital devices and standard datasets to construct image database.

**Preprocessing-** Before retrieving photos, they must be improved.

**Extraction-** Required features are removed.

**Similarity and Matching-** To calculate the query image's similarity to database images

**Output-** The final outcome after the process is validated for accuracy and recall. Image visuals are extracted. It's usually about the image. Color and form are low-level properties. Global and local characteristics examine if the entire image should be considered or just regions. Image color is crucial. Image color extraction techniques abound. Color histogram, color correlogram, color coherence vector, and color moments are color-based retrieval approaches. Contour-based and region-based features characterize

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the shape. Contour feature describes picture border, while region-based feature considers complete image.

Following steps illustrate the picture retrieval algorithm.

- Load database pictures into Software by specifying the dataset's directory.
- Convert all database photos to HSV using formula.
- Histograms for hue, saturation, and value are then generated and quantized.
- File is created to store database image values.
- Load the Query picture.
- To find HSV values in Query image, repeat steps 2 and 3.
- As values are obtained, calculate the distance between them and the trained dataset query image.
- Sort distances to assess image relevancy.
- GUI display of output images

For both query and database photos, we extract features by generating histograms for hue, saturation, and value. This section described histograms.

**Fundamental of content based image retrieval**

Image retrieval involves finding digital images in a large database. An effective image retrieval system may retrieve relevant images based on a query image that conforms to human perception. Text-based and visual-based viewpoints exist in database management and computer vision. Language-based image retrieval uses text to explain image content, while content-based uses image visual attributes.

**Conventional or text based image retrieval**

Conventional picture retrieval is a keyword-based method. Words-based image retrieval strategies employ text to describe image content, which is ambiguous and insufficient for image database search and query processing. Text-based image retrieval has trouble specifying exact keywords for visual material. Language-based textual annotations influence retrieval results.

**Content or visual based Image Retrieval**

Visual Image Retrieval uses visual properties such as color, texture, shape, and spatial relations to retrieve images.

**Existing System**

Trademarks are words or phrases, symbols, or combinations of the two that are distinguished from other marks by virtue of the quality and originality that are associated with them. They are key reputational assets that can be utilized as a marketing tool in order to transmit a certain assurance of quality, innovation, and the standards that the manufacturer strives to uphold. The requirement for trademark protection will be met by the implementation of this proposed system, which offers a solution to the problem of infringement and conceptual similarity. The solution to this issue is the creation of retrieval systems that are able to evaluate the degree to which several trademarks are visually comparable to one another. During the trademark registration process, one of the processes that is involved is making sure that the trademark that is to be registered is not similar to any trademark that is already registered. This visual resemblance is examined with the assistance of a similarity algorithm. The ease with which photographs can be captured by a variety of acquisition systems has contributed to an increase in the number of image collections that are currently available. The format for storing image data is fairly standardized; yet, effectively retrieving photos from such databases is a big challenge. The difficulty of this task is not to be underestimated. For the purpose of conducting an evaluation of the system's overall performance, we make use of the technique that is most frequently seen in practice: precision recall. Based on the findings of the experiment, we have come to the conclusion that the trademark. Image retrieval that is based on shape features performs more effectively and produces results that are more than sufficient. The limited work is mostly for the purpose of addressing the rotational problems.

## Proposed System

The conceptual model of the trademark comparison procedure created in is the foundation for the retrieval method that has been proposed. It gives an overarching perspective on comparing trademarks based on the conceptual similarities between them. The conceptual model is expanded upon by this system, which creates and evaluates a semantic algorithm for retrieving trademarks based on conceptual similarities. The suggested system makes use of natural language processing (NLP) techniques in conjunction with a brand new trademark comparison measure. The word similarity distance method, which was generated from the WordNet ontology, is also a part of the algorithm. WordNet is used in this algorithm because of its lexical associations, which are a reflection of how humans organize their semantic knowledge, and also because it has been demonstrated to be successful in a lot of other works that were done before this one. The Tversky contrast model, which is a well-known model in the theory of similarity, is where the trademark comparison measure originates from. The goal of the approach that we are proposing is to retrieve trademark hypothetical similarities in order to make such comparisons more precise and to provide greater protection against trademark infringement. In addition to this, the systems are able to retrieve the conceptual similarity of trademarks and handle the traditional data retrieval method. The proposed model can then be merged into a reflow system, which can then perform a more complete trademark comparison. This will consider the other two stages of similarity, namely sight and phonetic. The method that determines how closely two trademarks are conceptually related to one another. Text retrieval issues arise when trying to find trademarks that are conceptually identical. The virtually string matching that is applied to text is defined by the system. It is necessary to conduct an analysis of the trademarks in order to have an understanding of the primary conceptual similarities that result from various circumstances. This is the primary emphasis of the, which presents a hypothetical model of the comparison process with the goal of obtaining trademarks that are conceptually comparable to one another. The hash indexing will accept the token key and the synonym key before beginning pre-processing.

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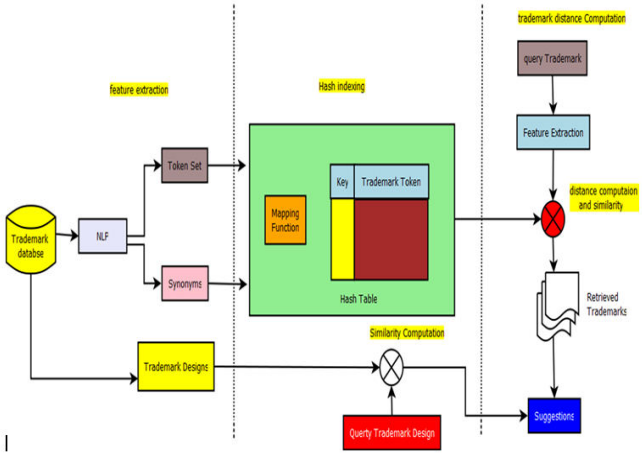


**Figure1.1: Architectural diagram proposed system**

It will then utilize the indexing in that key to generate a new trademark for the user that is comparable to the user requirement trademark. The token and its synonyms are the feature extractions that are defined here. The proposed retrieval method is used to develop a trademark reflow technique, and the algorithm is then evaluated based on how conceptually comparable the techniques are. The list of retrieval trademarks has been saved in a database in preparation for potential future usage of trademarks in further trademark retrieval concepts. A hashing technique is used to list the factors in order to cut down on the amount of additional time needed throughout the find procedure. The trademark is used as the key index for the hash indexing process. A user is able to submit a text that he wants to trademark through a process called trademark retrieval. If the trademark is already present in the system, then it is forwarded to the trademark matching process, after which it returns any documents that are comparable to the user. In the event that a trademark does not already exist in the system, the trademark will be saved in the database. The lexical resource is used, and then hash indexing is applied to that trademark in order to generate a new trademark that can be used to acquire the user. The return document is then sent to the user.

## LITERATURE SURVEY

**1. A Novel Trademark Image Retrieval System Based on Multi-Feature Extraction and Deep Networks Sandra Jardim, João António, Carlos Mora and Artur Almeida, Journal of Imaging, 2022**

In information retrieval system development, Graphical Search Engines retrieve pictures related to one or more input photos and display results visually. Since the 1990s, faster processing or realistic visual representations have improved outcomes. Fast methods incorporate high-level characteristics but struggle with massive datasets and abstract images. Image retrieval algorithms struggle with huge, unique industrial property picture collections. Our multi-phase picture retrieval method works independent of dataset complexity and size. Picture signatures are near-exact photos with abstraction layers for comparison. For multi-image search, image signature complexity requires parallel processing. A unique similarity compound formula extracts photos from all image signature components. Multiple picture assets improve image retrieval across image types. Deep convolutional networks abstract common objects.

**Summary**

This research describes the development of a deep learning-based content-based image retrieval system that can overcome the problems of a highly diverse trademark image dataset, implement multi-feature weighting, semantic assessment, and overall r Despite deep convolutional neural networks' inert complexity, the proposed approach is linear and real-time. The trials show sufficient visual retrieval ability, with apparent semantic and graphic similarity between input and output. The recommended system adjustments enhance result filtering, and the comparison dataset's expansion should improve efficiency and accuracy. User satisfaction and system accuracy would improve with a relevance feedback phase. After reweighting representation and metrics, the system recalculates findings. This level is challenging and takes more effort to improve customer satisfaction with fewer modifications.

**2. An Image Retrieval Framework Design Analysis Using Saliency Structure and Color Difference Histogram Himani Chugh, Sheifali Gupta, Meenu Garg, Deepali Gupta, Heba G. Mohamed, Irene Delgado Noya, Aman Singh and Nitin Goyal, Sustainability, Research Gate 2022**

This study obtains leaf pictures from plant industry characteristics. Images identify leaf kinds and illnesses. For plant disease diagnosis and botanical gardening in agriculture, a well-organized computer-assisted plant image retrieval technique can combine leaf picture color and form data. To improve leaf picture retrieval, this research presents a hybrid color-shape framework. Color Difference Histograms (CDH) identify color characteristics and Saliency Structure Histograms shape features (SSH). CDH and SSH descriptors calculate HSV color space and FOSF features to get leaf characteristics. Combining leaf picture HSV and FOSF properties. Database photographs are retrieved using concatenated attributes and a threshold Euclidean distance. 80% maximum Euclidean distance is ideal. The system outperforms feature descriptors with precision, recall, and F-measure scores of 1.00, 0.96, and 0.97.

**Summary**

An excellent leaf image retrieval system is built in this work. Here, CDH and SSH descriptors are used to get leaf pictures from the collection of random leaf images that match the query image. Simple and effective, the strategy outperforms salient points. The F-measure thresholds for system effectiveness are 40%, 75%, 80%, and 85%. Based on calculated values, hybrid feature descriptors retrieve pictures reliably at 80%, which may be used to improve accuracy. The program may also discover relevant photos in healthcare, internet marketing, historical sculptures, etc. Combining texture characteristics with color and shape features can also improve accuracy.

**3. Content-Based Image Retrieval with Combined Features: Color and Gradient Mahmut KILICASLAN, Recep DEMİRCİ, Research square, 2021**

Content-based picture retrieval requires feature extraction (CBIR). Low-level retrieval feature extraction is hard. This study provides a method. Multi-level Thresholding groups gradients and pictures.

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Codebooks are thresholds. Thresholds set codebook size. The codebook organizes color picture pixels. Cluster-pixel averaging lowers color. CBHs produce one-color cluster pixel counts. Original and gradient pictures provide histogram-based cluster-based feature vectors.
Use appropriate qualities. Combining vectors (CFV). Gradient operator decreases CFV color and characteristics. Combining feature vectors enhances picture retrieval accuracy and stability. Corel-1K, Corel-5K, Corel-10K, and GHIM-10K datasets were evaluated. The software examined cosine, histogram intersection, and Euclidean image histogram similarity. Two groups assessed experiments. Otsu, Kapur, and CGH-generated feature vectors evaluated CBIR outcomes. Compare CGH, LBP, and gradient-structure histogram CBIR systems (GSH). CGH-CBIR excelled.

**Summary**

CBIR systems need feature extraction. Feature extraction vectorized picture low-level features. Feature vectors depict images. CBIR systems frequently employ histogram. Color histograms are multidimensional matrices. Thus, matrix operations are computationally complex. This paper proposes a cluster-based one-dimensional histogram (CFV) retrieval architecture that integrates texture and color characteristics. Color graphics were first gradient-operated.
Multi-level Thresholding grouped the original and gradient images. The average cluster values are used to minimize color. Original and gradient photos have cluster-based one-dimensional histograms (CBH). Combining them created CFVs.
Different databases were tested. CGH-CFV outperformed Kapur and Otsu methods. Thus, a combined feature vector-based content-based picture retrieval system including color and texture information was built. Experiments proved its efficacy.

**4. Unsupervised Trademark Retrieval Method Based on Attention Mechanism, Jiangzhong Cao, Yunfei Huang, Qingyun Dai and Wing-Kuen Ling, sensors, Publisher's Note: MDPI, 2021**

In order to cut down on data labelling costs and disregard feature internal importance, this study provides an unsupervised trademark retrieval strategy based on attention mechanism. Important traits are given more of a fair learning weight thanks to the instance discrimination framework and a lightweight attention mechanism in the proposed method. Improved trademark retrieval and feature representation are possible outcomes of this unsupervised method. The number of compared trademark datasets at METU is large. From our experiments, we can see that the proposed strategy beats both trademark retrieval and other supervised learning techniques. The NAR (Normalized Average Rank) of 0.051 for trademark retrieval demonstrates the effectiveness of the suggested strategy

**Summary**

A lightweight attention network that included local cross-channel interaction into an instance discriminating framework retrieval addressed data annotation costs and attention. This method emphasizes and links critical channel information to better weigh crucial qualities. METU experiments showed that the recommended method beat trademark retrieval and most supervised algorithms, confirming their efficacy trademark retrievability. We'll check self-attention and trademark retrieval unsupervised learning and trademark retrieval.

**5. Setting the future of digital and social media marketing research: Perspectives and research propositions, Yogesh K. Dwivedi, Elvira Ismagilova, D. Laurie Hughes, Jamie Carlson, Raffaele Filieri, Jenna Jacobson, Varsha Jain, Heikki Karjaluoto, Hajer Kefi, Anjala S. Krishen, Vikram Kumar, Mohammad M. Rahman, Ramakrishnan Raman, Philipp A. Rauschnabel, Jennifer Rowley, Jari Salo, Gina A. Tran, Yichuan Wang, International Journal of Information Management, ELSEVIER, 2021**

Social media and the internet have transformed consumer behavior and company practices. Organizations may save money, boost brand recognition, and boost sales through social and digital marketing. However, poor electronic word-of-mouth and obtrusive and annoying online brand presence pose substantial obstacles. This article gathers digital and social media marketing specialists' insights. The experts' insights on artificial intelligence, augmented reality marketing, digital content management, mobile marketing and advertising, B2B marketing, electronic word of mouth, and ethical problems provide a thorough narrative on this vital topic. This research presents challenges and possibilities to academics and practitioners by identifying current research constraints, gaps, and questions and propositions that might progress digital and social marketing expertise.

**Summary**

Media, marketing. AI, AR, mobile, B2B, e-WOM discussed. Each view has concerns, choices, and studies. Digital marketing emphasizes environment, strategy, company, and results. Research. EWOM-intensive; krishen streamlines data-driven decisions. Raffaele Filieri and Gina Tran say consumer behavior affects WOM trust. Hajer Kefi suggests evaluating social media harm. Reading. AI-powered social media, ethics, consumer participation, and B2B marketing; carlson and Rahman argue customer journeys and social media boost value. Examine brand-harming trips. AI, AR, Big Data, and Blockchain are used in marketing. Social media marketers face word-of-mouth. Negative comments must be addressed quickly. Profession. Happiness increases brand loyalty, engagement, and sales. Customer chat bots help. AI/ML benefits clients. Trust, security, and privacy are AI ethics. Literature and experts highlight gaps, needs, and limits. Personality, platforms, culture. duplicating This study explores gaps, difficulties, and responses in practitioner research.

**6. Convolutional neural network based dictionary learning to create hash codes for content-based image retrieval, Şaban Öztürk, 10th International Conference of Information and Communication Technology (ICICT-2020), Science Direct, Elsevier, 2021**

This work examines sparse vectors in dictionary learning (DL) for CBIR problems. Since DL performs the learning process in an it cannot provide robust retrieval features, especially with a complicated backdrop. To solve this, a DL technique using CNN feature representation is presented. The suggested CNN-based DL approach initializes dictionaries using CNN's middle layers. DL input is the CNN picture vector. DL vectors are transformed to

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binary. So, DL generates hash codes. Modified COREL is used to test the suggested framework. The results show it's a promising, open-to-improvement strategy.

**Summary**

This article presents a CBIR framework for small-tagged datasets. It uses dictionary learning to train with few labelled data. Lambdas can be vectors with comparable numerical ratios for similar images. Easily convert lambdas to hash codes. DL difficulties hampered high performance. This study's CNN-supported DL architecture makes it easy to incorporate DL to retrieval tasks. Comparing in Euclidean space proves the proposed framework's usefulness. The Euclidean mAP results are promising. Comparing hash code results uses binarization. Future research will focus on more effective binarization, hash tables, and retrieval.

**7. Searching Silk Fabrics by Images Leveraging on Knowledge**

European silk textile production is endangered. Digital tools can assist preserve and make it accessible to the public and fashion industry. We offer an image-based retrieval method that uses a knowledge network describing silk textile manufacture and expert-formulated algorithms. Two similarity situations are used in an exploratory search engine.

**Summary**

In this research, we provide an image retrieval module that considers silk textile similarity. Using a knowledge graph, we turn domain-expert similarity rules into queries that create training data. Domain specialists help design and evaluate image retrieval models. Github3 has the method's code.
We find that the simplest visual resemblance yields the most accuracy. 83% of queries returned a meaningful image. Semantic similarity helps domain specialists compare and contrast the two. This module's user-friendly interface allows for further human evaluations.

**8. Image Representation Using Stacked Colour Histogram Ezekiel Mensah Martey, Hang Lei, Xiaoyu Li and Obed Appiah, algorithms, 2021**

CBIR is image-heavy. Inefficient pixel-by-pixel picture retrieval; CBIR uses color, form, and texture. Image definition: color and texture. Combining these variables doesn't help retrieval due to image rotation, scaling, and translation. Feature vectors affect job runtime. Stack Colour Histogram (SCH) combines color and neighbourhood data. SCH indexes photos using recurrent mean.
Continuously blurring photos; each transformation's output is histogram med. Bin-by-bin image indexing. Image blurring gives the intended SCH texture information from pixel neighbourhoods.
SCH tested Coil100, Outext, Batik, and Corel10K. Coil100, Outext, and Batik analyze homogeneous texture characteristics. Our descriptor increases retrieval and classification (CMTH, MTH, TCM, CTM and NRFUCTM).

**Summary**

This work proposes a simple and effective color and texture descriptor. The picture descriptor uses color and neighbourhood data. The 64-vector indexing approach is effective for image retrieval. The description shows a broad set of color and textural features. Final tests used four public database sets. Batik, Coil100, and Outext picture databases were utilized to test our texture descriptor. Corel10heterogeneous K's picture representation was evaluated. The experimental results suggest that our proposed technique outperforms well-established

**9. Leveraging Style and Content features for Text Conditioned Image Retrieval, Pranit Chawla, Surgan Jandial, Pinkesh Badjatiya, Ayush Chopra, Mausoom Sarkar, Balaji Krishnamurthy, CVF 2021**

Many frameworks and apps use Image Search. With larger product catalogues and more product attributes, users have trouble communicating. Image Retrieval with Text Comments recovers updated photos based on user feedback. We hypothesize that an image's content and style can be changed separately. We analyse an input image's style and content [illegible] **Graph and Domain Expert Rules, Thomas Schleider Raphael Tron** both spaces. Our approach beats TIRG, which distributes text over style and content areas individually using a single vector.

**Summary**

In this work, we concentrate on the task of text-conditioned image retrieval and provide our method, which makes use of the qualities in a picture that have been dissected into its style and content components. We do a large number of experiments on the Fashion IQ, and our results are almost always superior to those obtained by TIRG, the most recent state-of-the-art solution for this challenge.

**10. Image Retrieval Method Based on Image Feature Fusion and Discrete Cosine Transform DaYou Jiang and Jongweon Kim, applied sciences, 2021**

The research introduces a new content-based image retrieval (CBIR) method based on image feature fusion. Object- and place-centric deep networks extract deep features.
The discrete cosine transform (DCT) decreases dimensionality and solves deep correlation. Quantized Uniform Local Binary Pattern (ULBP), hue-saturation-value (HSV) histogram, and dual-tree complex wavelet transform yield shallow features (DTCWT).
SVD reduces the size of ULBP and DTCWT features. The experimental findings using Corel datasets and the Oxford building dataset suggest that the proposed strategy based on shallow feature fusion can greatly increase performance. The proposed strategy based on fusing deep characteristics can enhance performance marginally. This paper tests variables that affect picture retrieval performance, such as PCA vs. DCT. The DCT can reduce dimensions without considerable performance loss.

**Summary**

This paper uses deep feature fusion and dimensional feature reduction to retrieve images. We trained deep networks to extract place-centric features using a place-centric dataset. The average pooling layer's output feature vectors are input to DCT for dimensional feature reduction. Performance is improved with global shallow fused features. Our proposed technique was effective when compared to different datasets. Under the existing feature dataset, the PCA approach can choose the query image's principal components, improving retrieval performance more than DCT. Pretraining neural network model affects experiment findings

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in various ways. We'll optimize the deep feature model and ranking approach, then test it on larger datasets.

**11. Machine Learning Methods for Histopathological Image, Analysis: A Review, Jonathan de Matos, Steve Tsham Mpinda Ataky, Alceu de Souza Britto Jr., Luiz Eduardo Soares de Oliveira and Alessandro Lameiras Koerich, ELECTRONICS, 2021**

Histopathological images (HIs) are the gold standard for diagnosing various cancers. Even for experienced pathologists, analyzing such pictures is time-consuming and hard, leading to inter- and intra-observer discrepancies.

CAD systems can speed up an analysis. This research reviews shallow and deep learning strategies for histopathology image analysis; segmentation and feature extraction are also covered. We also list public and private HI datasets.

**Summary**

Segmentation and feature extraction decline. 4–8 list publications. DL processes HIs. Pre-processing normalizes. HI segmentation, feature extraction, and classification improved by Thresholding, filtering, and color models.
Earlier articles discussed segmentation. Measuring nuclei, stroma connections, and distance; stain normalization follows. DL reduces photo color and brightness shifts.
HI employs GLCM, LBP, and variants. shallow feature-based classifiers Learning representation and decision boundaries in one optimization phase hindered feature extraction in 2016. CNN identifies HI. Studies used shallow classifiers and unlinked CNN layers. Learn how networks acquire HIs. Grow HI. Most early initiatives use proprietary databases, limiting replication. Tests use public HI datasets. Unsupervised WSI .This review explains HI-to-DL transition. Datasets, appraisals, and surveys are included.

**12. A Review on Recent Advances in Content-Based Image Retrieval used in Image Search Engine, Smita V. Bhoir Ms, Sunita Patil, University of Nebraska – Lincoln, 2021**

This study evaluates color, texture, shape, low-level feature extraction, and contemporary machine and deep learning algorithms. Prospective research directions are discussed to spark more inquiry.

Visual data online has increased image search. Visual comprehension can affect text retrieval. Researchers in computer vision can't identify suitable photos. Recent CBIR study focused on relevant photographs, increasing its utility. Then there's a semantic gap. CBIR, image categorization, and image interpretation have improved in the last 20 years. The report summarizes CBIR research.

**Summary**

The study investigated CBIR image representation. This paper discusses contemporary methodology. Color, texture, and structure can characterize an image's look when a feature is detected. None exist. CBIR can enhance photos, say some. Picture components contribute to each other, and overall image attributes are best displayed as a cluster of each component's traits. Classification-based learning requires good feature dimensions. Improved CBIR neural network research. Deep networks demand huge images and processing power. Large image datasets make online deep net training harder. Large unstructured datasets boost unsupervised learning networks' performance. Creating more apps and graphics. A related image search takes time and a large dataset. Image representation or object-based processing can improve photo retrieval. This document quotes CBIR. Graph. Color, texture, form, and other extraction techniques.

**13. Text to photo-realistic image synthesis via chained deep recurrent generative adversarial network Min Wang, Congyan Lang, Songhe Feng, Tao Wang, Yi Jin, Yidong Li, Journal of Visual Communication and Image Representation, elsevier, 2021**

Most present algorithms generate crude graphics from text descriptions without exploiting the link between phrase semantics and visual content. We propose a CDRGAN for synthesizing images from text descriptions. Our approach uses chained deep recurrent generators to recover global and local picture structures. Our technique addresses image pixel logic and avoids computing bottlenecks by sharing parameters. Our technique is tested on CUB, Oxford-102, and MS COCO. Our strategy routinely outperforms state-of-the-art approaches, according to experiments.

**Summary**

We propose a CDRGAN for synthesizing images from text descriptions. The suggested method exploits the logic links between phrase semantics and visual content to generate semantically relevant and text-aligned graphics. Our approach uses chained deep recurrent generators to recover global and local picture structures. Our technique has extensive quantitative and qualitative results on CUB, Oxford-102, and MS COCO datasets.

**14. A novel ($k1$, $k2$, $n$)-threshold two-in-one secret image sharing scheme for multiple secrets, Lintao Liu, Yuliang Lu, Xuehu Yan, J. Vis. Commun. Image R. elsevier, 2021**

TiOSISS combines two SISSs for stack-to-see and accurate recovery with available computing resources. Most contemporary TiOSISSs use on steganography, which produces significant pixel enlargement and poor visual quality; researchers ignore two SISSs that should handle irrelevant hidden photos with separate thresholds. We propose a (k1, k2, n)-threshold TiOSISS for multiple secrets by managing the sharing phase's unpredictability. TiOSISS's scalability allows it to use different RGVCSs to increase performance. Analyses and experiments confirm its safety and effectiveness.

**Summary**

This study proposes a (k1, k2, n)-threshold TiOSISS for multiple secrets, which integrates RGVCS and PSISS. By controlling the randomness during PSISS's sharing phase with RGVCS shares, both systems' shared information is combined into one. In comparison to prior TiOSISSs, the suggested TiOSISS has various advantages: (a) independence between two SISSs; (b) no pixel

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expansion; (c) higher visual quality of recovered images by stacking; (d) great scalability; (e) straightforward recovery without extraction. To prove its effectiveness, we present security evaluations and experimental findings and explore how to ensure its visual quality. In the future, we'll explore the visual security of TiOSISS.

**15. Semantic-aware visual attributes learning for zero-shot recognition, Yurui Xie, Tiecheng Song, Wei Li, J. Vis. Commun. Image R. elsevier, 2021**

Zero-shot learning recognizes untrained image classes. Building a semantic embedding space like attributes bridges visual features with class labels. Most ZSL approaches align seen classes with human-designed properties, then transfer semantic information to unseen classes. Human-designed attributes may not predict image class, according to research. We use semantic-aware dictionary learning (SADL) to compare observed and unseen visual features. Semantic signals are elegantly integrated into visual recognition features. Our method outperforms ZSL on two challenging benchmark datasets.

**Summary**

We increase zero-shot learning's visuals (ZSL). Manually produced traits integrate ZSL visuals and class labels. Visual clues are natural. SADL studies invisible visual aspects. First, we define an objective with classification loss. Seen class semantics regularize unseen class learning, helping domain adaptation. ZSL lessons teach visual discrimination and alignment. SADL outperforms ZSL in two benchmarks.
It's research-intensive. Existing ZSL techniques unbalance visible and invisible classes.
Synthesizing unseen class exemplars can aid. Synthesis reduces classifier bias. Classify unknowns. Unseen test samples don't represent classes. Current ZSL can't do this.

**16. Image annotation based on multi-view robust spectral clustering, Mona Zamiri, Hadi Sadoghi Yazdi, Journal of Visual Communication and Image Representation, elsevier, 2021**

Annotating digital images is a prominent topic in semantic retrieval. These methods keyword visual content; low-level image features and high-level semantic ideas are ineffective. MVRSC models the relationship between semantic and multi-features of training images using the Maximum Correntropy Criterion. Half-Quadratic framework optimizes objective functions. The model offers tags based on decision-level fusion distance. We examine MVRSC's stability and limits. The proposed approach outperforms Flickr, 500PX, and Corel5K.

**Summary**

We predict test data tags with decision-level fusion. We also cover method stability and bound calculation. Testing real-world data and corel5k. This method compares to previous multi-view clustering algorithms. We will improve. We'll first analyze viewpoint variety and redundancy to improve model performance. The proposed method can be utilized with Flickr and 500PX information to boost performance. Optimization issues detect outliers. Tag prediction voting can modify weighted.

**17. Image Retrieval Scheme Using Quantized Bins of Color Image Components and Adaptive Tetrolet Transform, Naushad Varish, Arup Kumar Pal, (Member, Ieee), Rosilah Hassan, Mohammad Kamrul Hasan, Asif Khan, Nikhat Parveen, Debrup Banerjee, Vidyullatha Pellakuri, Amin Ul Haqis, And Imran Memon, IEEE 2020**

Color, texture, and shape are used to retrieve photos hierarchically (or descriptors). Hierarchy lowers search space. Histograms define form features.
Shape-based retrieval reduces UDB search space (or original dataset). Texture feature descriptors are created using HSV adaptive tetrolet transform. Tetro-minoes impact geometry. Each sub-image has a matrix-based texture feature descriptor. Intermediate images are unrelated. Autocorrelation mixes quantized HSV colors. Color descriptors use sub-image textures. Three descriptions are cheaper. Better image retrieval is visual-content-based.

**Summary**

In this study, a hierarchical CBIR system based on color, texture, and form is developed for finding relevant images from a huge image dataset. The retrieval technique filters irrelevant photos at each stage, narrowing the search space. The suggested image retrieval system leverages feature extraction to improve retrieval rates. The suggested method minimizes intermediate datasets based on the user's interest and returns K, M, and L. The picture retrieval system reduces search space. Final retrieval output is independent of color, texture, and form similarity weights. On two benchmark datasets, the described CBIR system performs well. Our methodology outperforms state-of-the-art methods in most category images.

**18. Sentiment-based Sub-event Segmentation and Key Photo Selection Junghyun Bum, Joyce Jiyoung Whang_, Hyunseung Choo, Journal of Visual Communication and Image Representation, Elsevier, 2020**

Social media and cloud services are increasing image collection. Choose key photographs from each occasion in a photo collection. Few studies suggest sub-event segmentation despite many.
SAPS intelligently summarize photo collections using metadata and visual sentiment. We cluster events by photo and generate novelty scores to determine sub event borders. Rank photo collections on mood, emotion, and aesthetics. We test 6,480 photos from six people. Our sentiment-based sub-event segmentation excels. The suggested method finds sub-event borders and key photos better than basic content features.

**Summary**

SAPS describe photo sets based on visual sentiment. Sub-event borders are determined by time, place, and novelty ratings. We ranked photographs by emotion, attractiveness, and sentiment. We tested on 5,480 real-world photos. Our strategy detected sub-event borders and key images by focusing on granular emotion traits. This technique will extract keywords and annotate content..

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**19. High capacity reversible data hiding in encrypted images using SIBRW and GCC, Shaowei Weng, Caiying Zhang, Tiancong Zhang, Kaimeng Chen, Journal Pre-proofs, 2020**

High-capacity data embedding in encrypted images is proposed using GCC and SIBRW. SIBRW reorders higher bit-planes to group associated bits. SIBRW rearranges each higher bit-plane for optimal aggregation performance, and GCC compresses it group-by-group. GCC can compress not only many 1 (or 0)-bit groups, but even a single group, offering a large embedding space. XOR-encryption and scrambling boost security; experiments show the scheme's embedding capacity and security

**Summary**

SIBRW can combine highly-correlated bits of each MSB plane through rearranging. GCC can compress each rearranged bit stream to accommodate three LSB planes. SIBRW and GCC boosts our method's embedding capacity. Our encryption method delivers high security with bit-level XOR encryption and bit-level scrambling.

**20. A hybrid localization model using node segmentation and improved particle swarm optimization with obstacle-awareness for wireless sensor networks, Songyut Phoemphon, Chakchai So-In, Nutthanon Leelathakul, Expert Systems With Applications, elsevier, 2020**

Localization is energy-free. Sensor apps need nodes. Sensors locate dangers. Fire, landslide, and water quality need root causes. Hop distances and RSSI improve localization. In obstructed settings, sensor node positioning affects localization. Between anchor and unknown nodes, diffraction influences RSSI. This increases SN crowd-localization. NS-IPSO isolating SNs increases anchor-to-unknown distances. Locate nodes. Shortest pathways between anchor nodes form sensor nodes (STs). Next, select SMs. Anchor nodes boost localization. Moving particles increase PSO. Shaped sensor nodes: C, H, S. the suggested technique is more accurate than HDPSO, Hybrid PSO, ADNL, WSLA, and min-max PSO

**Summary**

We'll improve unknown node localization so the distance to the anchor node is more accurate. NS-fitness Distributing sensor and anchor nodes improves IPSO's function. Simulations and experiments should be done to determine how network topology, network dimensions, and signal propagation models affect location approximation performance. Future research should focus on power, memory, computational and transmission logics.

**21. Image Retrieval Using Features From Pre-Trained Deep CNN Vijayakumar Bhandi, Sumithra Devi K.A. International Journal of Scientific & Technology Research Volume 9, Issue 06, June 2020**

This research proposes a VGG16 deep CNN image retrieval system. This framework uses weather images dataset. Comparing a handcrafted baseline to CBIR; deep CNN features outperform handwritten features in picture retrieval trials.

**Summary**

The proposed CBIR framework had 86.73% retrieval precision, compared to the baseline's 73.25. (Color, shape, texture) 13.48% more accuracy using CBIR; all datasets and picture retrieval counts improve precision (fetch size); our findings show that pre-trained deep CNN model features perform better than handcrafted features in CBIR techniques. VGG16 CNN features improve weather image retrieval. We utilized VGG16. ResNet, AlexNet, GoogleNet, etc. provide weather photographs. Some CNN model layers can be retrained to improve results.

## Goals

To discover Conceptual similarity to improve their accuracy and security and to enable the system to retrieve trade-marks' conceptual similarities identify logo similarities using SIFT features in order to prevent logo trademark issues; Use similarity distance to reduce the extra cost of protection.

## CONCLUSION

This effort was inspired by fraud, data similarities (which IR systems can't handle), and trademark similarity. Trademark similarity and semantic reflow are state-of-the-art. Two trademarks with comparable semantic implantation are emphasized. Reflow data similarity's pros and cons are examined. Trademark similarities praise semantic insertion. TM retrieval model. Using lexical, knowledge, and NLP, the model compares two trademarks. Analyze trademarks. Focusing on theoretically relevant trademarks helps trademark search engines. Comparing lexical resources will improve algorithm accuracy.

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