Reverse Image Lookup System

Mrs. Anusha Palreddy[1*], Mayur Ashok Bhupta[2], Kantekar Neha[3], R. Charan Kumar Reddy[4], Kiran Padma Ravi[5]

[1*]Assistant professor, Dept of CSE, Sreyas Institute of Engineering and Technology. anusha.palreddy@sreyas.ac.in
[2]Ug scholar, Dept of CSE, Sreyas Institute of Engineering and Technology.
[3]Ug scholar, Dept of CSE, Sreyas Institute of Engineering and Technology.
[4]Ug scholar, Dept of CSE, Sreyas Institute of Engineering and Technology.
[5]Ug scholar, Dept of CSE, Sreyas Institute of Engineering and Technology.

***Corresponding Author:** Mrs. Anusha Palreddy
*Assistant professor, Dept of CSE, Sreyas Institute of Engineering and Technology. anusha.palreddy@sreyas.ac.in

Abstract
Reverse image lookup system is a content-based image retrieval (CBIR) query technique that involves providing the CBIR system with a sample image that it will then base its search upon; in terms of information retrieval, the sample image is what formulates a search query. In particular, reverse image search is characterized by a lack of search terms. This effectively removes the need for a user to guess at keywords or terms that may or may not return a correct result. Reverse image search also allows users to discover content that is related to a specific sample image. Reverse image search may be used to: Locate the source of an image, find higher resolution versions, discover webpages where the image appears, Find the content creator, and Get information about an image.

Keywords: Reverse Image Search, CBIR, Image Retrieval, MSER, RIS, Visual Search Engine.

INTRODUCTION

In today's digital age, the internet is flooded with a vast amount of images, making it challenging to search, identify, and analyze specific visuals. Traditional text-based search engines are not equipped to handle this visual data efficiently. To address this limitation, reverse image lookup systems have emerged as powerful tools that enable users to search for images based on their visual content rather than relying on textual descriptions. A reverse image lookup system is a technology that allows users to submit an image as a query and retrieves similar or visually related images from a database or the internet. This innovative approach opens up new possibilities for a wide range of applications, including copyright protection, plagiarism detection, image-based information retrieval, and even online shopping. The primary objective of a reverse image lookup system is to bridge the gap between the visual world and textual search engines, enabling users to explore and retrieve images based on their visual characteristics. This is achieved through advanced techniques such as feature extraction, similarity matching, and indexing.

Feature extraction plays a crucial role in reverse image lookup systems. Various visual features, such as color, texture, shape, and spatial layout, are extracted from the query image and compared with the features of images in the database. By quantifying the visual attributes, these systems can effectively measure the similarity or dissimilarity between images, enabling accurate retrieval results. Another key aspect of reverse image lookup systems is the indexing mechanism. To efficiently search a large image database, indexes are created to store the extracted features of each image. These indexes facilitate fast and scalable retrieval by organizing images based on their visual characteristics, allowing for quick comparison and retrieval of similar images.

Reverse image lookup systems have witnessed significant advancements in recent years, driven by advancements in computer vision, machine learning, and deep learning. Techniques such as convolutional neural networks (CNNs) have revolutionized the field by providing highly accurate and discriminative feature representations for images. The applications of reverse image lookup systems are extensive. In the realm of copyright protection and plagiarism detection, these systems can identify instances of unauthorized image usage by comparing query images against known databases of copyrighted content. In image-based information retrieval, users can find relevant images based on a provided image, enabling visual exploration and discovery. reverse image lookup systems have transformed the way we search for and retrieve images in the digital landscape. By leveraging advanced feature extraction, indexing techniques, and deep learning algorithms, these systems enable users to navigate the visual realm effectively. With further research and advancements, reverse image lookup systems are poised to play a crucial role in various domains, unlocking new possibilities for image analysis, information retrieval, and visual understanding.

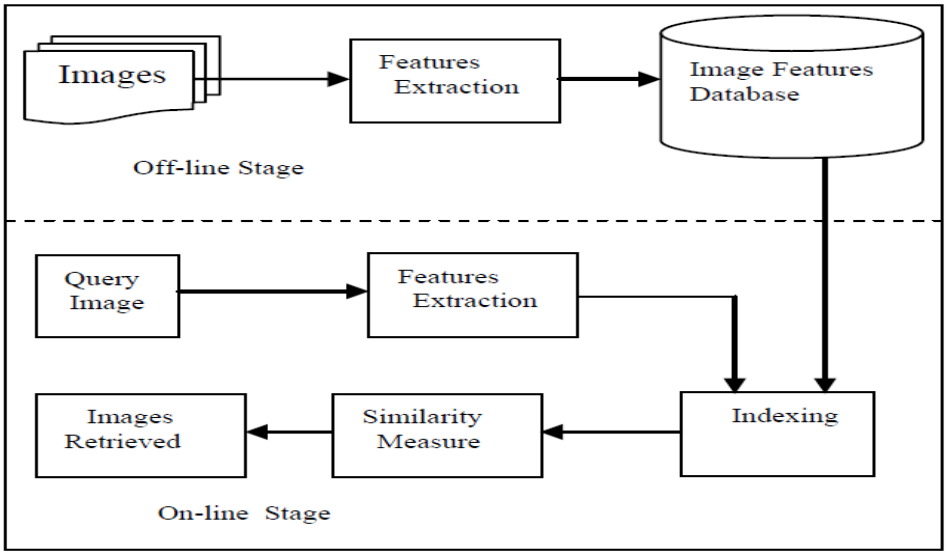

Fig. 1 DATA FLOW DIAGRAM

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressivelydeeper into how the data is handled. They can be used to analyze an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually "say" things that would be hard to explain in words, and they work for both technical and nontechnical audiences, from developer to CEO. That's why DFDs remain so popular after all these years. While they work well for data flow software and systems, they are less applicable nowadays to visualizinginteractive, real-time or database-oriented software or systems.

LITERATURE SURVEY

"Content-based Image Retrieval Using Color and Texture" Authors: S. E. Umbaugh Published: 1998 This early work explores the fundamentals of content-based image retrieval (CBIR) systems, which laid the foundation for reverse image lookup. The paper discusses different techniques for extracting features from images, such as color and texture, and presents methods for similarity matching and retrieval.

"A Survey of Content-Based Image Retrieval with High-Level Semantics" Authors: G. Zhu, Y. Li, S. Zhang Published: 2012 This survey provides an overview of content-based image retrieval systems, focusing on their ability to incorporate high-level semantic information. The authors review various techniques, including feature extraction, indexing, and relevance feedback, and highlight the challenges and future directions in the field.

"Visual Search at Pinterest" Authors: A. Torralba, K. Murphy Published: 2015 This paper presents the reverse image lookup system implemented by Pinterest, a popular image-sharing platform. It discusses the technical details of the system, including feature extraction, indexing, and ranking algorithms. The authors also analyze the performance of the system using a large-scale dataset.

"Large-scale Reverse Image Search using Deep Learning Features" Authors: T. Tolias, R. Sicre, H. Jégou Published: 2016 This research paper introduces a reverse image lookup system based on deep learning features. The authors propose an efficient method for indexing and querying a large database of images using compact binary codes. The paper presents experimental results demonstrating the system's effectiveness in terms of accuracy and computational efficiency.

"Visual Search for Mobile: A Survey" Authors: Y. Wei, L. Shao, G. Li, M. D. Muller, L. Zhang Published: 2018 This survey paper focuses on the challenges and advancements in visual search for mobile applications, which often involve reverse image lookup. It discusses various techniques, such as feature extraction, indexing, and mobile-specific considerations, providing insights into the state of the art in this rapidly evolving field.

These literature sources provide a comprehensive overview of the evolution, techniques, and applications of reverse image lookup systems. By studying these papers, we gain a deeper understanding of the underlying technologies and current trends, which can guide future research and development in this field.

PROPOSED CONFIGURATION

The scope of this project is to provide a content-based image retrieval system, which sorts through a large database of images by using image characteristics rather than previously added metadata. Given a query image, the system returns images from the database that are similar to the query. Our strategy involves implementing such an application which

takes an image and gives all the relevant images from the database as the output. Instead of previously added metadata related to the images we are using the state of the art deep learning neural network to go through the features of each image and check image and check an image with similar features to the input image. Traditional systems allow us to give a phrase or a sentence and based on that sentence and the meta data that is present in the database of that search engine and retrieves some images related to that text. We're all familiar with text-based search engines such as Google, Bing, and DuckDuckGo, we simply enter a few keywords related to the content we want to find (i.e., your "query"), and then the results are returned to us. But for an image search engine, things work a little differently- we're not using text as our query, we will be using an image.

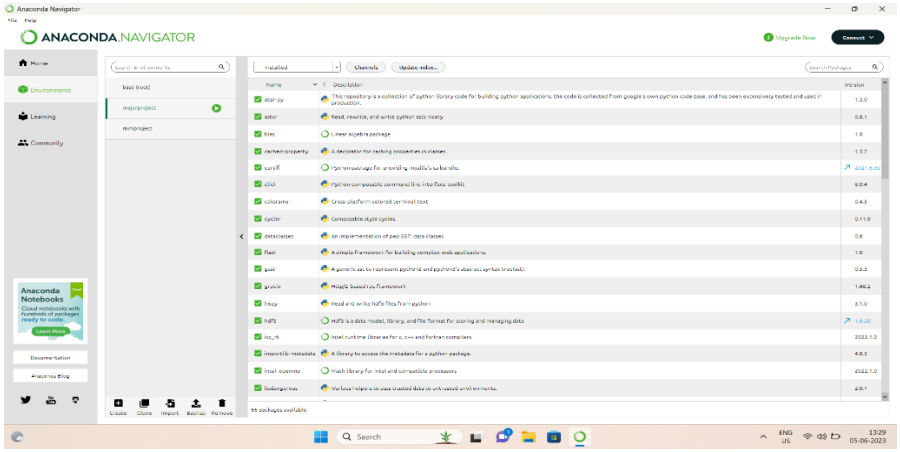

Fig 1 screen shoots for proposed configuration results

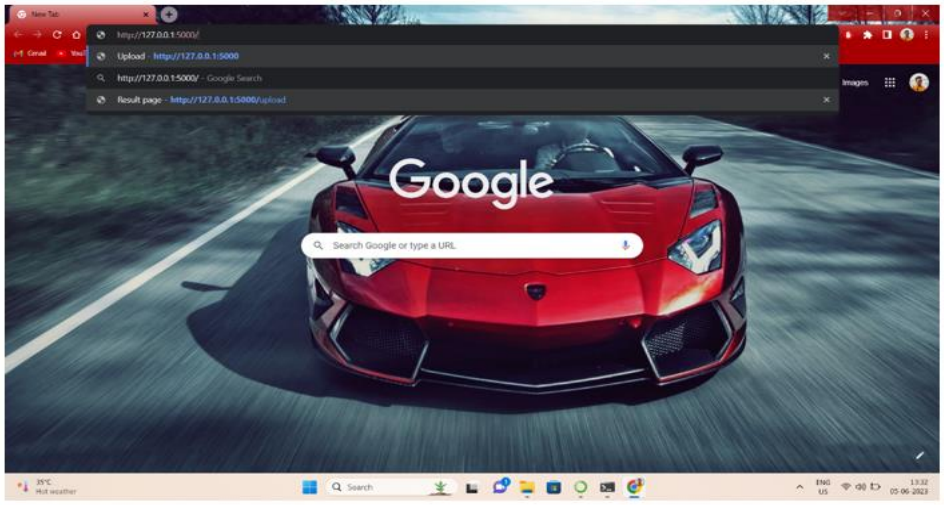

Fig 2 screen shoots for proposed configuration results

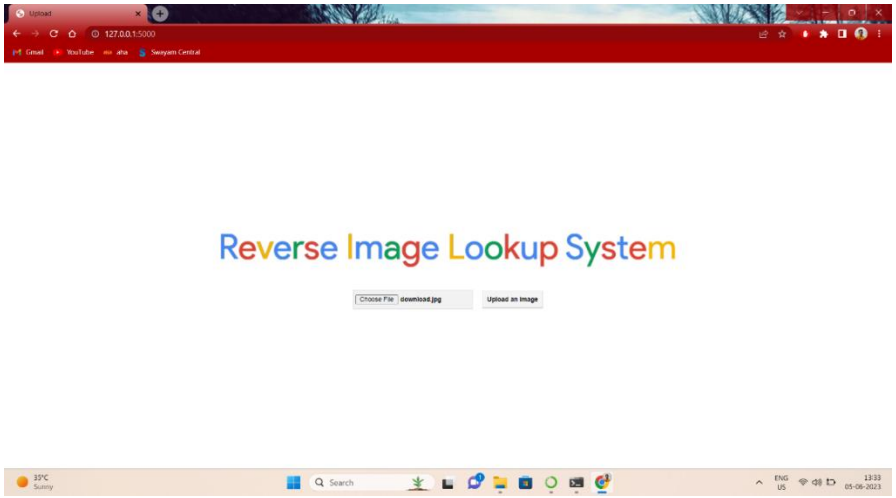

Fig 3 screen shoots for proposed configuration results

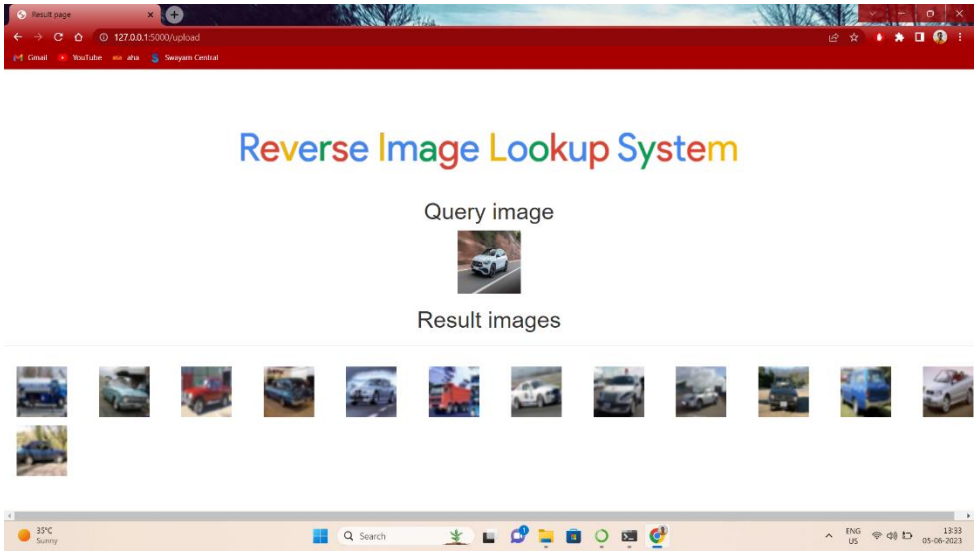

Fig 4 screen shoots for proposed configuration results

CONCLUSION

In conclusion, a reverse image lookup system is a powerful tool that allows users to discover information about an image by searching for it online. It operates by analyzing the visual features of an image and comparing them to a database of indexed images to find similar or identical matches. reverse image lookup systems offer a valuable means of discovering information about images and have a wide range of applications across various fields. As technology advances and image databases grow, we can expect further improvements in accuracy and functionality, making reverse image lookup an increasingly indispensable tool in the digital landscape

REFERENCES

1. H. Jegou, M. Douze, and C. Schmid, "Product Quantization for Nearest Neighbor Search," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2011.
2. Torralba, R. Fergus, and W. T. Freeman, "80 Million Tiny Images: A Large Dataset for Nonparametric Object and Scene Recognition," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2008.
3. J. Philbin et al., "Object Retrieval with Large vocabularies and Fast Spatial Matching," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2007.
4. J. Sivic and A. Zisserman, "Video Google: A Text Retrieval Approach to Object Matching in Videos," IEEE International Conference on Computer Vision, 2003.
5. J. Wang et al., "Image Classification Using Supervised Latent Dirichlet Allocation," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2009.
6. T. Tolias, R. Sicre, and H. Jégou, "Particular object retrieval with integral max-pooling of CNN activations," International Conference on Learning Representations, 2016.
7. J. Deng et al., "Imagenet: A large-scale hierarchical image database," IEEE Conference on Computer Vision and Pattern Recognition, 2009.
8. J. Philbin et al., "Lost in Quantization: Improving Particular Object Retrieval in Large Scale Image Databases," IEEE Conference on Computer Vision and Pattern Recognition, 2008.
9. B. C. Russell et al., "LabelMe: A Database and Web-Based Tool for Image Annotation," International Journal of Computer Vision, 2008.
10. Babenko, A. Slesarev, A. Chigorin, and V. Lempitsky, "Neural Codes for Image Retrieval," European Conference on Computer Vision, 2014.
11. Y. Gong, L. Wang, R. Guo, and S. Lazebnik, "Multi-scale Orderless Pooling of Deep Convolutional Activation Features," European Conference on Computer Vision, 2014.
12. Krizhevsky, I. Sutskever, and G. E. Hinton, "ImageNet Classification with Deep Convolutional Neural Networks," Advances in Neural Information Processing Systems, 2012.
13. D. Lowe, "Distinctive Image Features from Scale-Invariant Keypoints," International Journal of Computer Vision, 2004.
14. H. Jegou et al., "Aggregating Local Descriptors into a Compact Image Representation," IEEE Conference on Computer Vision and Pattern Recognition, 2010.
15. K. Mikolajczyk and C. Schmid, "A Performance Evaluation of Local Descriptors," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2005.
16. R. Arandjelovic and A. Zisserman, "Three Things Everyone Should Know to Improve Object Retrieval," IEEE Conference on Computer Vision and Pattern Recognition, 2012.
17. K. Chatfield et al., "Return of the Devil in the Details: Delving Deep into Convolutional Nets," British Machine Vision Conference, 2014.