

Image Search Engine

This project aims to build an image search system capable of searching and retrieving images from a digital repository with high precision and efficiency by using a training dataset. Traditional keyword-based search often fails to capture the semantic meaning of visual content, leading to inaccurate or incomplete results. This project leverages **machine learning (ML)** techniques to enable **content-based image retrieval (CBIR)** and **semantic search**, allowing users to find images not only by textual metadata but also by visual similarity.



Project Objectives

1. Develop a robust image embedding model using machine learning techniques to represent images in a compact feature space.
2. Allow users to search by uploading an image to find visually similar results.
3. Implement efficient retrieval mechanisms using similarity search algorithms (e.g., FAISS, Annoy, ScaNN) to handle large-scale datasets.
4. Support domain-specific retrieval by fine-tuning models on curated datasets from the “WonderWorld” collection (e.g., landmarks, artworks and cultural heritage)
5. Provide an intuitive user interface for interactive search, categorical filtering (e.g. landmark, artwork and cultural heritage), and visualization of results.

Expected Outcomes

A web-based prototype platform demonstrating image retrieval, suitable for applications in digital libraries, e-commerce, tourism, education, and cultural heritage.

Evaluation Criteria

Accuracy - How well the system retrieves the correct or relevant images.

Efficiency - Speed of retrieval in large-scale datasets

Scalability - Ability to handle growing datasets and high query volume

Usability - User-friendliness of the interface for both text and image queries.