

Clash of T-AI-TANS

Advanced Image Retrieval System

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Introduction

Objective:

- Develop an advanced image retrieval system that enables users to search for images based on textual descriptions.

System Overview:

- Uses pre-trained models to understand and match the content of images with user-provided descriptions.

Real-Life Applications (1/2)

1. Education:

- **Problem:** Difficulty in indexing and searching images in class notes.
- **Solution:** Text-based search for students to easily find images related to specific topics.

Real-Life Applications (2/2)

2. Satellite Imaging:

- **Problem:** Challenges in identifying key features in vast satellite images.
- **Solution:** Search for events like landslides or tsunami survivors using descriptive text.

High-Level Implementation (1/2)

1. Image Captioning Model:

- Uses pre-trained models (e.g., Git-Large by Microsoft) to generate text descriptions for images.

2. Text Embedding Model:

- Utilizes a model like BERT to convert descriptions into vectors, allowing similarity search through cosine similarity.

High-Level Implementation (2/2)

3. Vector Database:

- Stores embedding vectors to reduce computational load and hardware requirements for queries.