System Architecture

Frontend (Streamlit)

This is the starting phase: **User Query (Text Input).** The user interacts with the Streamlit app by typing a search query into the search bar. For visually impaired or disabled individuals, a voice-activated search option can be integrated.

Backend (FastAPI)

API Endpoint **(FastAPI)**. Streamlit sends the query to the FastAPI Backend where data is processed.

Feature Extraction (CLIP Model)

CLIP(Contrastive Language-Image Pretraining) a machine learning model by OpenAI that deals with images and text.

Image Embedding Database (Vector Storage)

Stores feature vectors of 500 images.

Nearest Neighbor Search (KNN)

Finds the closest matching images based on similarity.

Image Dataset (Stored Image)

The raw images that are linked with embeddings ready to be returned to the query in Frontend search

Display Results

Matching images are shown in Streamlit.