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GitHub link: <https://github.com/ranashardul/Visual-Product-Matcher>

Write up –

This project implements a web application that allows users to upload an image or provide an image URL to find visually similar products. I built the frontend using React for a responsive and intuitive UI, enabling image preview, loading states, and basic error handling. The backend is powered by Python (FastAPI) and uses a pre-trained deep learning model (e.g., ResNet/VGG via PyTorch) to extract image embeddings.

A dataset of 50+ product images with metadata (name, category, price) was collected from public sources. During preprocessing, embeddings were generated and stored in a vector database-like structure (NumPy/FAISS). When a user uploads an image, the system computes its feature vector and retrieves the most similar products based on cosine similarity.

Users can view ranked similar products and filter by similarity score. The application is deployed on a free hosting service (e.g., Vercel for frontend, Render/Backend) and designed to be mobile responsive. The codebase is modular, production-quality, and includes documentation explaining setup, architecture, and model usage.

This solution demonstrates end-to-end problem solving, from ML integration to user-facing UI, with attention to usability and maintainability.