

# Visual Product Matcher – Project Documentation

The **Visual Product Matcher (VPM)** is a web application that enables users to find visually similar products by uploading an image or providing an image URL. The backend is built with **FastAPI** and integrates **OpenAI's CLIP (ViT-B/32)** model from HuggingFace to generate image embeddings. These embeddings are compared against a precomputed database of product embeddings to return similarity-ranked results.

The backend handles image uploads, URL fetching, and cosine similarity search over stored embeddings, with support for filtering products by category, brand, price, and similarity threshold. Product metadata and embeddings are stored in JSON format, with static hosting for images.

The frontend, developed with **Next.js, TailwindCSS, and Framer Motion**, provides a responsive and intuitive UI. Features include drag-and-drop uploads, URL input, real-time filters, similarity score sliders, and clean product cards. Loading states and error handling ensure smooth user experience across devices.

This project fulfills the technical assessment requirements: robust upload/search functionality, a product database of 50+ items, filtering options, and a mobile-responsive design. It demonstrates the integration of modern web frameworks with AI models to create a practical, production-ready application.

Git Link - <https://github.com/zoyaaa02/Visual-Product-Matcher>