Project Name: Motion Industries Image-to-Product AI Matching System

This project depends on having knowledge of AI.

Team Makeup / Skills:

1. Python Backend
2. Machine Learning (Open To Suggestions and Ideas)
3. Computer Vision & Image Processing
4. Web Scraping
5. Database & Search (Prefer Elastic)
6. Web Development Front End (Prefer React)

Concept: The purpose of this project is to design, build, and test an application and/or process to find and add product images to Motion.com

Key Project Requirements/Deliverables:
1. Automated Image Discovery & Matching
Build a system that finds product images from multiple sources (web, suppliers, manufacturers) and matches them to products in the item catalog using available data (MFR name, part number, description). Must handle variations in naming and incomplete data.

2. ML-Based Confidence Ranking
Develop a machine learning model (XGBoost or similar) that ranks image-product matches by confidence score, considering factors like text matching in the image name (OCR vs. product data), image quality, source reliability, and visual relevance. The model should provide clear confidence scores to prioritize human review efforts.

3. Review & Validation Interface
Create a web-based UI for the Motion content team to efficiently review, approve, or reject image matches, with the ability to reference images by Motion item numbers and bulk process results back into the catalog system.

4. Scalable Processing Pipeline
Design for processing millions of products - prioritize the 2M enriched products first, with support for batch operations, and include duplicate detection and quality filtering.

5. Measurable Success Metrics
Establish clear evaluation criteria: >90% precision on human-reviewed samples, track coverage percentage of products with verified images, and demonstrate significant reduction in manual image sourcing time. Include feedback loops for continuous model improvement.

6. **Documentation** detailing the system architecture, data preprocessing, model training, and evaluation results and recommendations for further improvements or production readiness.