CleanTech: Transforming Waste Management with Transfer Learning
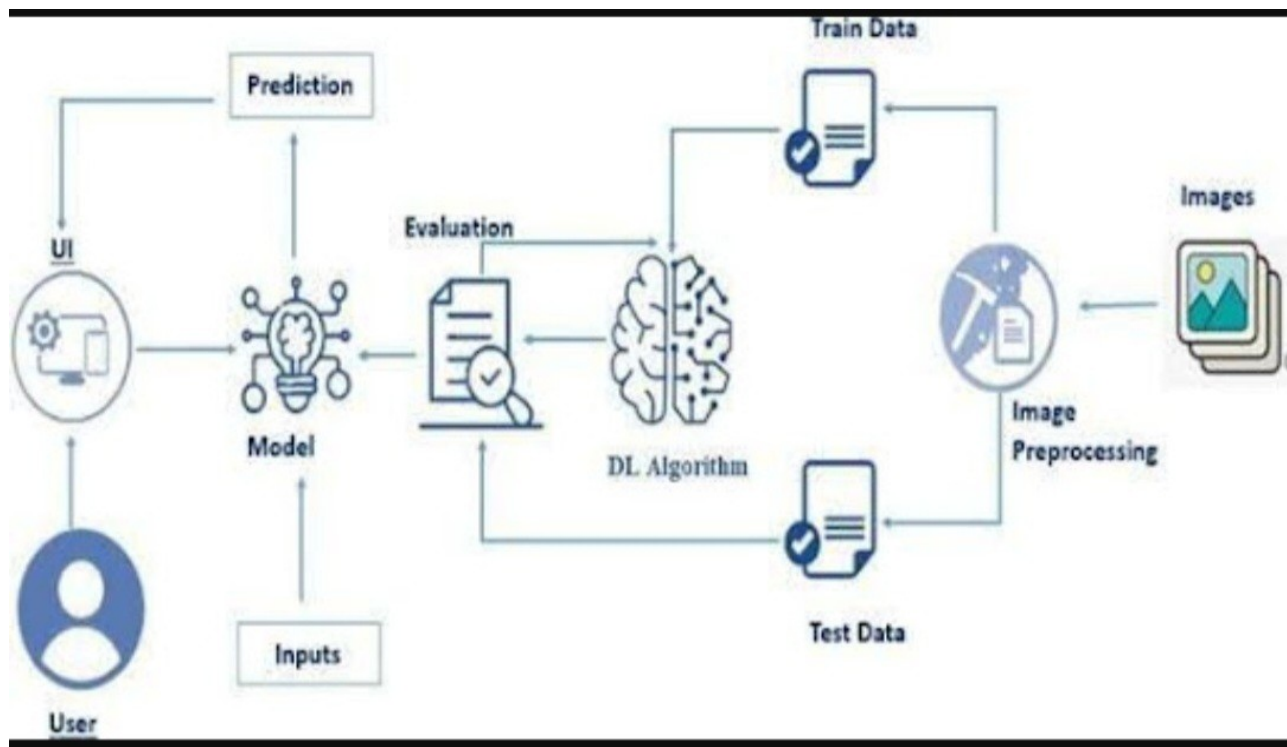
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Project Design Phase – Solution Architecture

Solution Architecture Overview:

The CleanTech solution leverages AI-based waste classification to improve recycling and municipal waste sorting. It integrates mobile user interfaces, a backend deep learning model, preprocessing pipelines, and cloud-hosted dashboards.

System Architecture Diagram:

Data Flow Description:

1. User captures image of waste using mobile app.
2. Image is preprocessed and sent to backend.
3. DL Algorithm processes the image to classify waste.
4. Output and prediction are shown in the UI and stored for analytics.
5. Evaluation is used to improve future model performance.

Development Phases:

• Phase 1: Dataset preparation and model training.
• Phase 2: App and backend integration.
• Phase 3: Dashboard implementation.
• Phase 4: City-level pilot and monitoring.