Intelligent Video Environment Analysis & Item Detection (Part A : Easy)

Background

Verifying a person's surroundings is often required in industries such as banking, insurance, real estate, and e-commerce. Traditionally, this involves manual verification through site visits or document checks. With AI-driven video analysis, we can automate this process by identifying the environment type (home, shop, office, etc.), extracting visible items, and generating structured outputs such as inventory or asset lists.

This reduces manual effort, speeds up verification, and ensures accuracy.

Your Challenge

Build an **AI-powered solution** that can analyze a video recorded at a location and automatically:

1. **Classify the environment** (e.g., home, shop).
2. **Detect and identify items in the background.**
3. **Count the quantity of each detected item.**
4. **Generate a structured report** (e.g., JSON/CSV) with detected objects, counts, and confidence scores.

Use Case A: Home Environment Analysis

- The system should analyze a **video of a home** and detect major **household appliances and furniture** such as:
    - Sofa, chairs, tables, cupboards, bed, fridge, TV, washing machine, AC, microwave, decorative items.
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- Output should include **item type + count**.
- Example:
    - Sofa: 2
    - Bed: 1
    - TV: 1
    - Refrigerator: 1
    - Chairs: 4

This enables automatic **household asset verification** for insurance, rental checks, or loan approvals.

Use Case B: Shop Environment Analysis

- The system should analyze a **video of a shop** and:
    1. Detect shop infrastructure items (shelves, counters, fridges, display units).
    2. Detect and **categorize shop inventory** (e.g., bottles, boxes, clothing items, electronics).
    3. Provide a **count of items per category**.
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- Example:
    - Shelves: 5
    - Chairs: 2
    - Bottled Products: ~120
    - Packaged Boxes: ~75

- Refrigerator: 2

This enables **automatic inventory population**, helping in merchant verification, loan underwriting, and stock digitization.