

Documentation: AI-Powered Image Analysis System

This project is a web-based application that performs real-time object detection on images and video streams using YOLOv8. Built with Flask, OpenCV, and Ultralytics' YOLOv8, it supports both image uploads and live webcam detection through a simple UI.

Features

- Upload an image and receive detection results with bounding boxes
- Run real-time object detection using your webcam
- Detect custom classes trained with YOLOv8 (e.g., phone, mouse, steel bottle, plastic bottle)
- Simple web interface using Flask and HTML/CSS
- Fully modular and extensible for future upgrades like segmentation, analytics, or deployment

Interface

- Upload Image: Send an image to the server and receive annotated results
- Live Detection: Activate your webcam and see objects detected in real-time

1. Set Up Your Environment

git clone https://github.com/itzdkgowda/AI_Powered_Image_Analysis_System

Create virtual environment

Install the dependencies:

```
pip install -r requirements.txt
```

2. Run the Web App (Detection via Upload & Live Cam)

```
python app.py
```

Then open <http://localhost:5000> in your browser.

Click Upload Image to analyze any photo

Click Live Detection to activate your webcam

This runs using the trained YOLOv8 weights and gives real-time results.