**YOLO-Based Real-Time Object Detection and Alert System**

**Overview**

This project uses the YOLOv8 model to perform real-time object detection via a webcam. When a person is detected, the system triggers an alert by generating speech and sending an email notification. This setup could be utilized in security systems or environments where monitoring and immediate alerts are necessary.

**Features**

* **Real-time object detection**: Uses YOLOv8 to identify objects in the webcam feed.
* **Text-to-speech alert**: When a person is detected, an audible alert is generated.
* **Email notification**: Sends an email alert when a person is detected.

**Requirements**

* **Python 3.x**
* **YOLOv8**: Install using Ultralytics YOLO.
* **OpenCV**: pip install opencv-python
* **pyttsx3**: pip install pyttsx3
* **smtplib**: Included in Python standard library.

**Installation**

1. **Clone the repository:**

bash

1. **Install dependencies:**
2. Copy code

pip install -r requirements.txt

*(Create a requirements.txt file with the following content if it doesn't already exist):*

txt

Copy code

opencv-python

pyttsx3

ultralytics

1. **Download YOLOv8 Weights:**
   * Place the YOLOv8 weights file (yolov8n.pt) in the yolo-Weights/ directory.
2. **Update Email Credentials:**
   * Replace sender\_email, recipient\_email, and the password with your own credentials in the script.

**Usage**

1. **Run the script:**

bash

Copy code

python detect\_and\_alert.py

1. **Webcam Feed:**
   * The script will start capturing from the webcam. If a person is detected, a rectangle will be drawn around them, a speech alert will be generated, and an email will be sent.
2. **Stop the script:**
   * Press q to exit the webcam feed and stop the script.

**Project Structure**

* **detect\_and\_alert.py**: The main script for real-time object detection and alerting.
* **yolo-Weights/**: Directory to store YOLO weights (yolov8n.pt).
* **README.md**: Documentation for the project.

**License**

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