# README - Intrusion Detection and Surveillance System

## Project Overview

This web-based Intrusion Detection and Surveillance System offers real-time monitoring through a webcam. It captures frames and uses YOLOv8 for object detection. If an intruder is detected, alerts are sent via SMS and email. The backend is built with Flask, using WebRTC for live streaming and SQLite for data storage.

## Features

- User registration with webcam image capture

- Secure login with hashed passwords

- Live video streaming with WebRTC

- Real-time object detection using YOLOv8

- SMS alerts using Twilio API

- Email alerts using SMTP with image

- Frame capturing and local storage

- Simple web dashboard for monitoring

## Technologies Used

- Python 3.x

- Flask

- SQLite & SQLAlchemy

- YOLOv8

- OpenCV

- WebRTC

- Twilio API

- SMTP

## Installation Instructions

1. Clone or download the repository.

2. Create and activate a virtual environment:

python -m venv venv  
 venv\Scripts\activate # On Windows

3. Install dependencies:

pip install -r requirements.txt

4. Configure Config.py file with your credentials

5. Run the app:

python app.py

6. Open your browser and go to <http://localhost:5000>

## How It Works

1. User registers with personal details and a captured image.  
2. Upon login, the system starts webcam streaming.  
3. Frames are analyzed using YOLOv8 for object detection.  
4. If an intruder is detected, alerts are sent via SMS and email.  
5. Captured images and user data are stored locally.

## Security Considerations

- Passwords are securely hashed.

- Data is stored locally to maintain privacy.

- No cloud-based data transfer.

## Future Scope

- Face recognition for precise verification

- Intrusion logs with timestamps

- Multi-camera support

- Mobile app integration

- Cloud storage for logs and alerts