CMS

Crowd Monitoring System

Crowd Monitoring System EGT215 Instruction Manual

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1. Introduction

1.1 Purpose of the Application

A powerful tool that can be used on uploaded videos or live videos. The tool can:

➔ Track the movement of people in a crowd
➔ Detect & count the number of people in a crowd
➔ Analyze and predict crowd behavior and dynamics
➔ Shows densely populated areas

1.2 Purpose of the Manual

This manual is designed to provide comprehensive instructions on how to effectively use CMS. It aims to assist users in understanding the functionalities and features of CMS.

1.3 Scope

The manual covers the installation, setup, and usage of the CMS. It does not encompass any third-party applications or hardware components.

1.4 Target Audience

This manual is intended for new users and existing users who seek guidance on the CMS's functionalities. It assumes a basic understanding of computers and software usage.

1.5 Document History:

Version	Date	Author	Description
1.0	February 6	Koh Tong Ning, Cayden Goh, Chen Jun Zhao, Muhd Haris Bin Hadi	Initial release

2. Getting Started

2.1 System Requirements

Before proceeding with the installation, ensure that your system meets the following requirements:

- Operating System: Windows 7/8.1/10/11 64-bit
- Processor: Intel i5-2400/AMD FX-8320
- RAM: 4 GB

- Disk Space: 10 GB
- Internet Connection: Broadband

2.2 Installation Instructions

Follow these steps to install the CMS:

1. Download python using the link https://www.python.org/downloads/ (skip if you already have it installed).
2. Download the CMS Zipfile from https://github.com/HHYM-9399/CrowdMonitoringSystem/tree/master.
3. Extract the Zip File.
4. Open the install.bat file, this will automatically install all needed libraries. You will only need to run this once.
5. Once the libraries are fully installed, open the start.bat file & copy the IP link given and paste it into a browser to open the UI.
6. To end the program, head to the terminal and type Control + C.
7. When asked to “Terminate batch job (Y/N)?” type ‘Y’ to confirm.

3. User Interface Overview

3.1 Main Screen

The main screen provides access to all major features of CMS, including:

- Advanced AI Integration for smart crowd detection
- Both live camera detection and uploaded video detection
- Live preview of Camera and Uploaded Video
- Heatmap tracking showing hotspots
- Track and counts the number of people in the video

3.2 Navigation

1. *Side Bar:* Utilize the sidebar to access different detection types and settings.
2. *Confidence Slider*: To indicate confidence level. Confidence level is a measure of percentage on how sure the model is about its predictions. A high confidence score means the model is very confident, while a low confidence score means it's less certain.
3. *Crowd Count Slider*: To select how many people are in a crowd before it becomes too crowded. (not available for heatmap)
4. *How it works Button*: To access the instruction manual from the UI.

3.3 Functionality Overview:

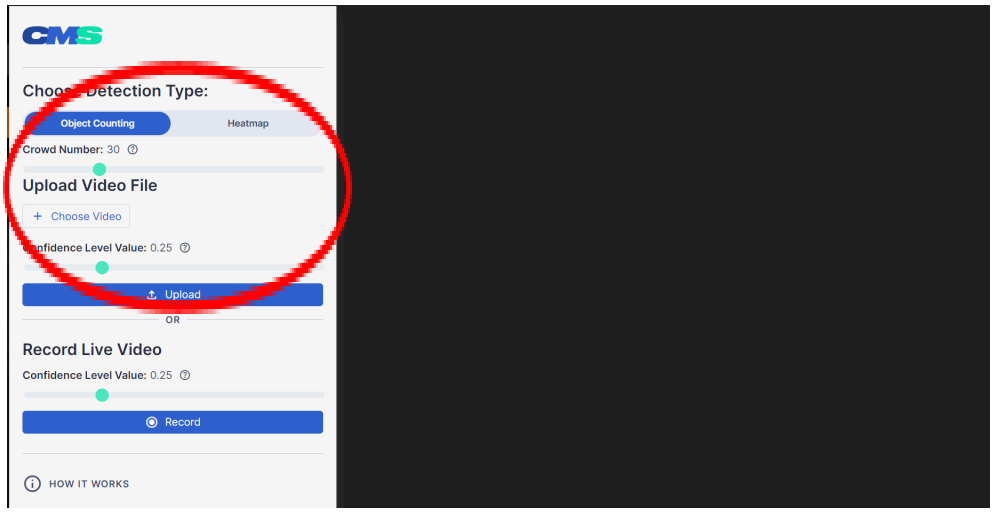
Crowd Monitoring System is a cutting-edge AI Application packed with powerful functionalities designed to enhance user experience and useability. Below is a brief description of each major functionality and its purpose:

- **Crowd Monitoring:** CMS utilizes advanced YoloV8 technology to enable tracking of each person.
- **Object Tracking and Counting:** The number of people detected will be shown and their trail will be drawn behind them.
- **Heatmap:** A Heatmap is integrated into CMS allows for easy understanding of hot spots which could result in overcrowding.
- **Live Video Camera:** A camera can be used to predict live allowing for real-time processing allowing for easy monitoring.

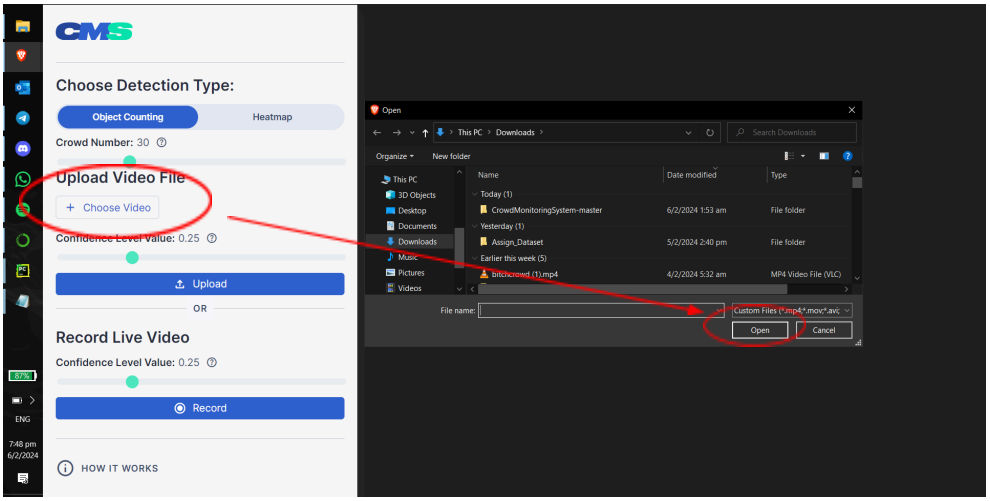
4. How to Use CMS

4.1 Uploaded Video

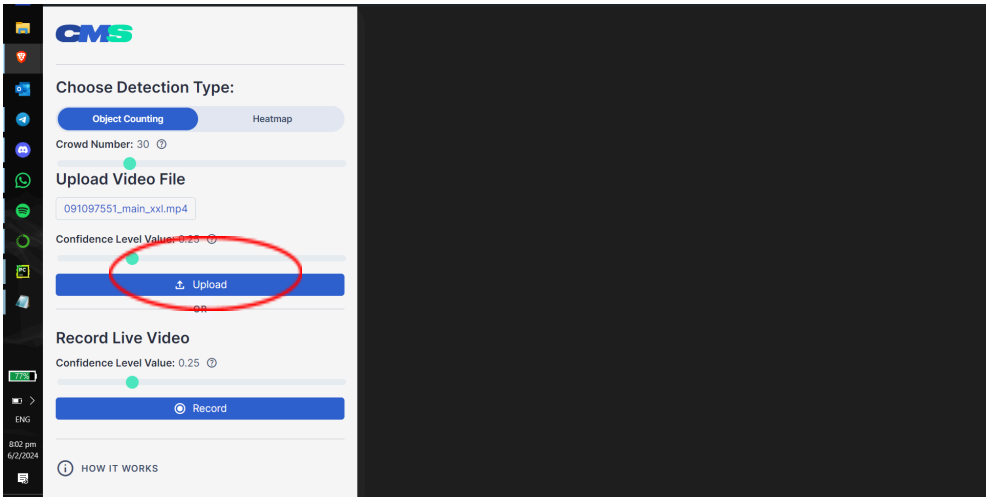
1. Configure the settings for detection type, crowd count number & confidence level. (crowd count number only available for object counting)



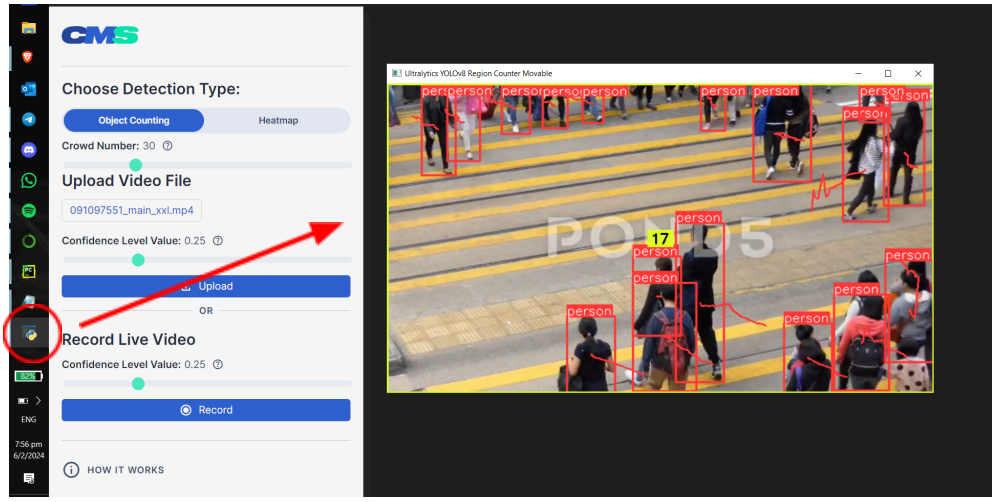
2. Click Choose Video and open the video you want to detect.



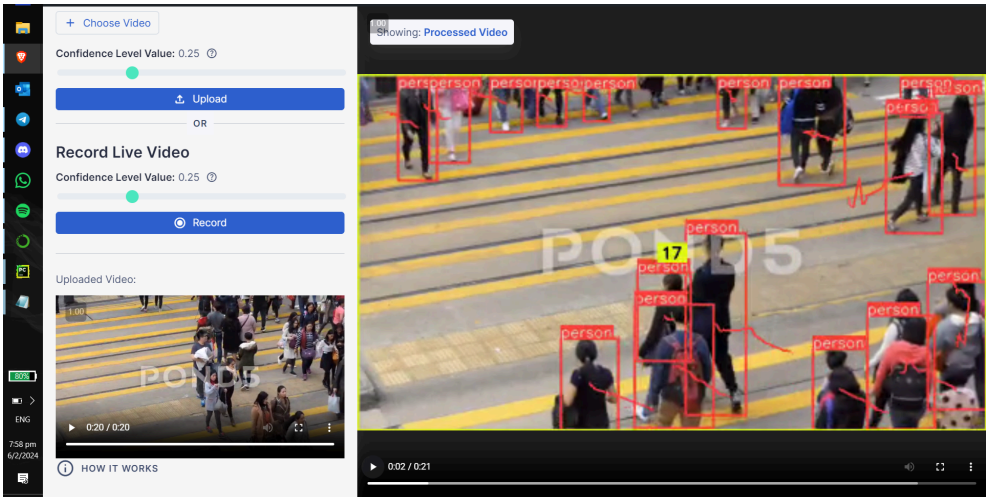
3. Click Upload.



4. Open the Python Window to view the streaming of the processed video. To end the video detection early, press the Python Window & hold Q.



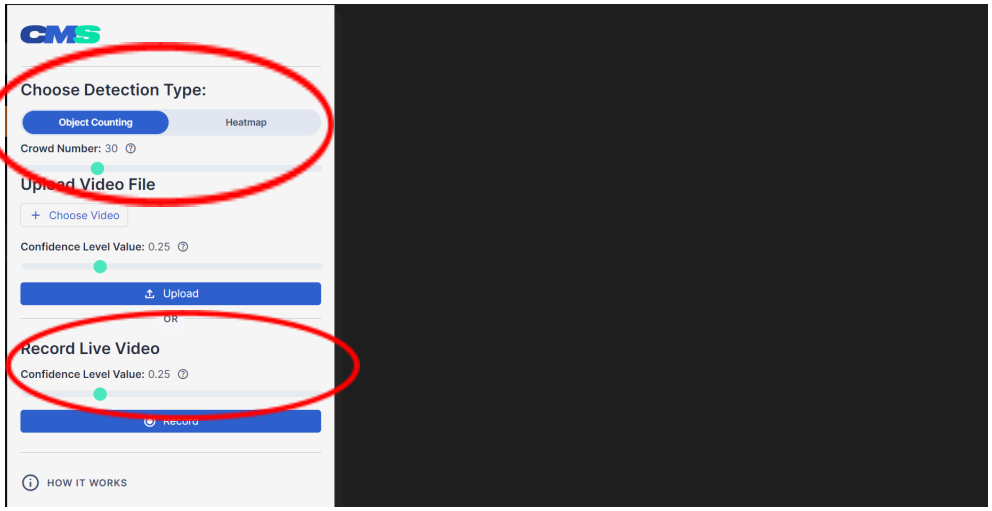
5. When the video ends, the detected video will display alongside the Original Video.



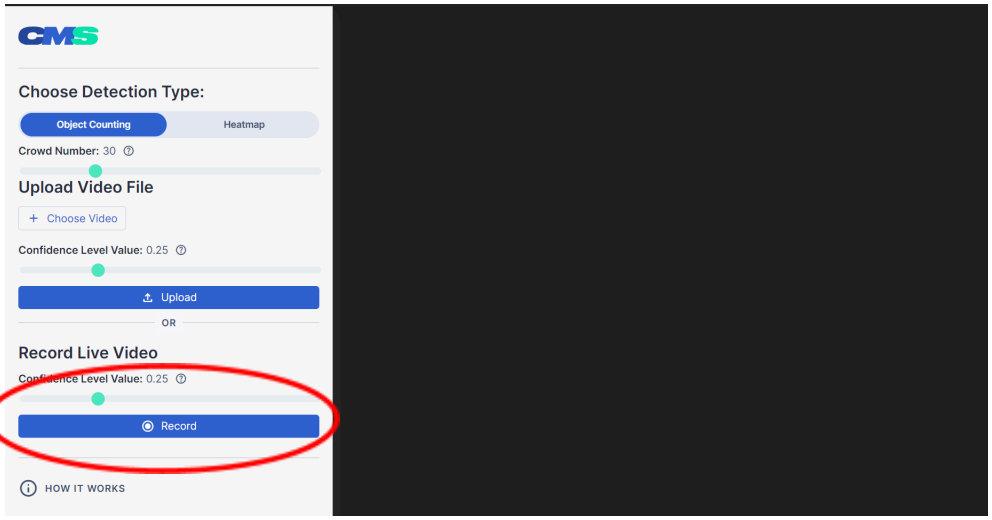
4.2 Live Video

If you are using live camera:

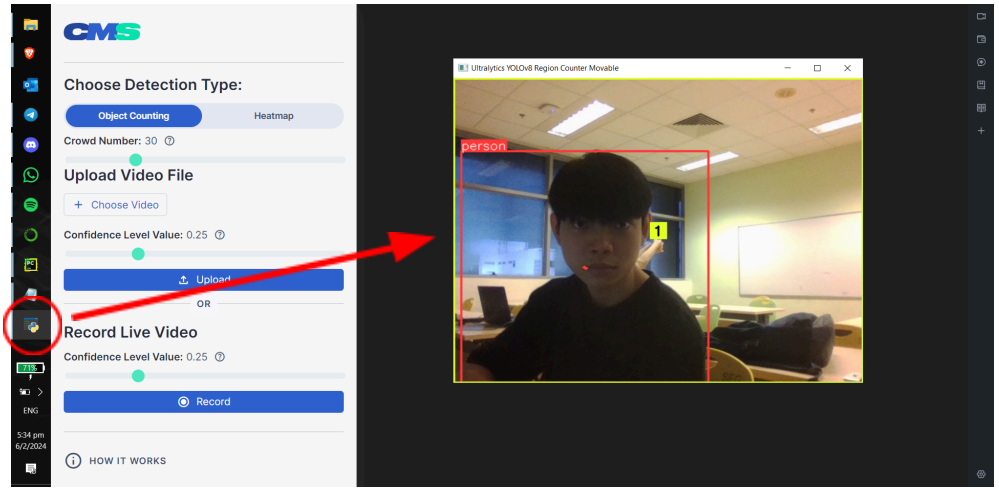
1. Configure the settings for confidence level, detection type & crowd number. (crowd number only available for object counting)



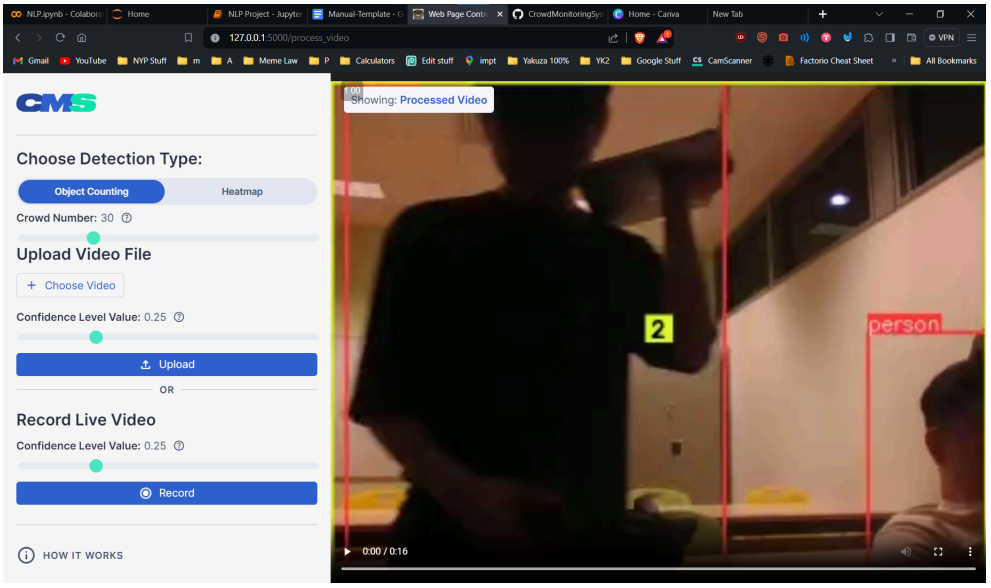
2. Click Record.



3. Open the Python Window to view the live streaming. To end the video detection livestream recording, press the Python Window & hold Q.



4. When the recording ends, the recorded detection video will display on the UI.



5. Frequently Asked Questions (FAQs)

5.1 General Inquiries:

Q: How long does the video take to process?
A: Depending on your hardware, it could take anywhere from 20-30 seconds for a 10 second video for the minimum specs.

Q: Can I use CMS to detect other objects?
A: CMS is only able to track and detect People, however you can contact me at kohtongning@gmail.com and I will add in other classes for you for **FREE**. 

5.2 Troubleshooting:

Q: I uploaded a video but it says invalid file type. How can I fix this?
A: Ensure that the video file type is .mp4. If it's already .mp4, ensure that the video file is not corrupted.

Q: The video does not display at the end. How can I fix this?
A: This could be a result of your browser not being compatible with the video tag. Try using another browser such as Microsoft Edge, Chrome, or Firefox.

Q: The terminal closes after running the start.bat file. How can I fix this?
A: This could be a result of you not having the necessary python libraries. Try rerunning the install.bat file and then rerunning the start.bat file.