Quoc Cao

EE104

Lab7

**Documentation**

\*\*\*Github: <https://github.com/Quoccao1/Balloon-Flight-game.git>

\*\*\*Video link for the Balloon Flight: <https://youtu.be/fjk90VRRcco>

\*\*\*Video link for the images recognize demonstration: <https://youtu.be/YPcKq5HIRl8>

* **Install the tool to label custom images.**
* Reference:

Creating your YAML file to demonstrate that you can add labels to your new images:

<https://wandb.ai/onlineinference/YOLO/reports/Collect-and-Label-Images-to-Train-a-YOLOv5-Object-Detection-Model-in-PyTorch--VmlldzoxMzQxODc3>

* Download and unzip the labeling repo from GitHub.

( <https://github.com/ivangrov/ModifiedOpenLabelling>)

* Then, open the folder location, enter **cmd** <enter> in the address bar and type:

**pip install -r requirements.txt**

**python run.py**

* The number of classes is specified in the class.txt file. We can add more classes if we want.
* Pointing to any label and right click to remove that label.
* Press Control-C from the Powershell window to stop the tool and the labeling process.
* **Download a Yolo COCO dataset.**
* Download and unzip the COCO dataset from here: <https://github.com/ultralytics/yolov5/releases/download/v1.0/coco128.zip>
* Install Ultralytics
* Open Command Line or Powershell windows as an administrator
* **git clone** [**https://github.com/ultralytics/ultralytics**](https://github.com/ultralytics/ultralytics)
* **pip install -e ultralytics**
* **cd c:\ultralytics**
* Create directories for your **ee104\_train** and **ee104\_val** files
* Edit the yaml file to add the custom class as we want
* Open a Powershell window (Run as administrator) and run the commands below

**\*\*\*Note**: Do a trial run with epochs=20 first, then change the number of epochs to as high as your time permits, i.e. epochs=100**\*\*\***

**yolo task=detect mode=train model=C:/ultralytics/ultralytics/models/v8/yolov8n.yaml data=C:/ultralytics/ultralytics/datasets/datasets/coco128\_ee104.yaml epochs=20**

**yolo task=detect mode=train model=C:/ultralytics/ultralytics/models/v8/yolov8n.yaml data=C:/ultralytics/ultralytics/datasets/datasets/coco128\_ee104.yaml epochs=100**

* Then, you will use your own best.pt model that you just trained to test the webcam.
* Here is the command to detect from the computer USB webcam:

**yolo task=detect mode=predict model=C:/ultralytics/runs/detect/train/weights/best.pt source=0** show=True **(\*\*Make sure to change to your own directory\*\*)**

* **Train and recognize a new object and yourself.**
* Add and train successfully more classes of your choice to the existing classes to recognize yourself and a new object. Add a minimum of 15-30 pictures for accuracy and to get the high accuracy you can add as many pictures as you want.
* **Game Development – Balloon Flight:**
* A hot-air balloon appears in the middle of the screen when the game starts. Using the mouse button to make the balloon rise or fall would be best. The challenge is keeping the balloon in the air without hitting birds, houses, or trees. For every obstacle you avoid, you’ll score one point. But as soon as you hit one, the game is over.
* Play for at least 2 minutes and two of any of these choices: Lives, More High Scores, File Handling, Level Up, Space out the Obstacles,