

Configuration Manual

MSc Research Project
MSc. In Cyber Security

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MSc Project Submission Sheet
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Configuration Manual

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1. Hardware Setup



Figure 1: System Specification

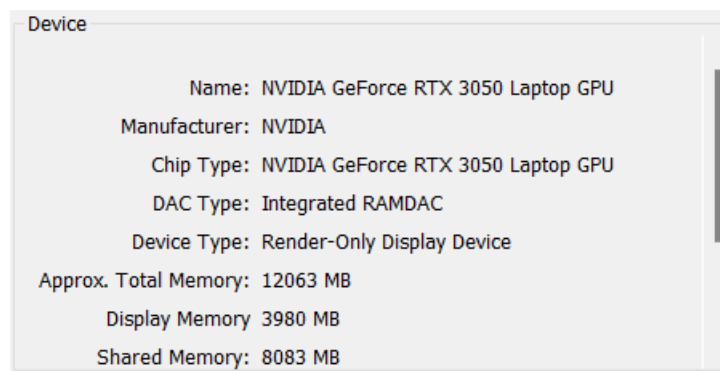


Figure 2: GPU Information

2. Package/ Software Requirements and Installation

2.1 Software Requirements for YOLO model training, testing

The Following are the Software requirements –

How to use: **pip install -r requirements.txt**

Core Dependencies:

certifi==2023.7.22

click==8.1.7
colorama==0.4.6
filelock==3.12.4
six==1.16.0

Data Manipulation and Analysis:

numpy==1.26.1
Pillow==10.1.0
matplotlib==3.8.0

Machine Learning and Deep Learning:

torch==2.1.0+cu121
torchaudio==2.1.0+cu121
torchvision==0.16.0+cu121
ultralytics==8.0.200

Web and Network Requests:

requests==2.31.0
urllib3==2.0.7

Development and Packaging Tools:

build==1.0.3
pip-tools==7.3.0

Text and Data Processing:

cycler==0.12.1
fsspec==2023.10.0
idna==3.4
pyparsing==3.1.1
typing_extensions==4.8.0

Other Utilities:

contourpy==1.1.1
fonttools==4.43.1
mpmath==1.3.0
networkx==3.2
psutil==5.9.6
PyYAML==6.0.1
tqdm==4.66.1
tzdata==2023.3

2.1.1 Environmental Setup

A. Anaconda Environment Setup

```
Administrator: Anaconda Prompt - conda deactivate - yolo task=detect mode=train epochs=100 data=data_custom.yaml model=y...
(base) C:\Windows\System32>cd \

(base) C:\>D:

(base) D:\>conda create -n yolo_csgo python=3.11
Collecting package metadata (current_repodata.json): done
Solving environment: done

==> WARNING: A newer version of conda exists. <==
  current version: 23.7.4
  latest version: 23.9.0

Please update conda by running

    $ conda update -n base -c defaults conda

or to minimize the number of packages updated during conda update use

    conda install conda=23.9.0
```

Figure 3: Environment Setup

- B. Anaconda Environment Activation with Ultralytics ¹Installation For YOLO which installs pytorch CPU version.

```
(base) D:\yolo>conda activate yolo_cs2
```

Figure 4: Activate Environment

```
(yolo_cs2) D:\yolo>pip install ultralytics
Collecting ultralytics
  Downloading ultralytics-8.0.200-py3-none-any.whl.metadata (31 kB)
Collecting matplotlib>=3.3.0 (from ultralytics)
  Downloading matplotlib-3.8.0-cp311-cp311-win_amd64.whl.metadata (5.9 kB)
Collecting numpy>=1.22.2 (from ultralytics)
  Downloading numpy-1.26.1-cp311-cp311-win_amd64.whl.metadata (61 kB)
----- 61.2/61.2 kB 1.6 MB/s eta 0:00:00
Collecting opencv-python>=4.6.0 (from ultralytics)
  Downloading opencv_python-4.8.1.78-cp37-abi3-win_amd64.whl.metadata (20 kB)
Collecting pillow>=7.1.2 (from ultralytics)
  Downloading Pillow-10.1.0-cp311-cp311-win_amd64.whl.metadata (9.6 kB)
Collecting pyyaml>=5.3.1 (from ultralytics)
  Downloading PyYAML-6.0.1-cp311-cp311-win_amd64.whl.metadata (2.1 kB)
Collecting requests>=2.23.0 (from ultralytics)
  Using cached requests-2.31.0-py3-none-any.whl.metadata (4.6 kB)
Collecting scipy>=1.4.1 (from ultralytics)
  Downloading scipy-1.11.3-cp311-cp311-win_amd64.whl.metadata (60 kB)
----- 60.4/60.4 kB 3.1 MB/s eta 0:00:00
Collecting torch>=1.8.0 (from ultralytics)
  Downloading torch-2.1.0-cp311-cp311-win_amd64.whl.metadata (25 kB)
Collecting torchvision>=0.9.0 (from ultralytics)
  Downloading torchvision-0.16.0-cp311-cp311-win_amd64.whl.metadata (6.6 kB)
Collecting tqdm>=4.64.0 (from ultralytics)
  Downloading tqdm-4.66.1-py3-none-any.whl.metadata (57 kB)
----- 57.6/57.6 kB 3.0 MB/s eta 0:00:00
Collecting pandas>=1.1.4 (from ultralytics)
  Downloading pandas-2.1.1-cp311-cp311-win_amd64.whl.metadata (18 kB)
Collecting seaborn>=0.11.0 (from ultralytics)
  Downloading seaborn-0.13.0-py3-none-any.whl.metadata (5.3 kB)
Collecting psutil (from ultralytics)
  Downloading psutil-5.9.6-cp37-abi3-win_amd64.whl.metadata (22 kB)
Collecting py-cpuinfo (from ultralytics)
  Downloading py_cpuinfo-9.0.0-py3-none-any.whl (22 kB)
```

Figure 5: Install Ultralytics

- C. Installation of pytorch GPU version², using the following command “conda install pytorch torchvision torchaudio pytorch-cuda=12.1 -c pytorch -c nvidia”

¹ <https://docs.ultralytics.com/>

² <https://pytorch.org/get-started/locally/>

```

(yolo_cs2) D:\yolo>pip3 install --upgrade torch torchvision torchaudio --index-url https://download.pytorch.org/whl/cu121
Looking in indexes: https://download.pytorch.org/whl/cu121
Requirement already satisfied: torch in d:\anaconda\envs\yolo_cs2\lib\site-packages (2.1.0)
Collecting torch
  Downloading https://download.pytorch.org/whl/cu121/torch-2.1.0%2Bcu121-cp311-cp311-win_amd64.whl (2473.9 MB)
    ----- 2.5/2.5 GB 2.1 MB/s eta 0:00:00
Requirement already satisfied: torchvision in d:\anaconda\envs\yolo_cs2\lib\site-packages (0.16.0)
Collecting torchvision
  Downloading https://download.pytorch.org/whl/cu121/torchvision-0.16.0%2Bcu121-cp311-cp311-win_amd64.whl (5.8 MB)
    ----- 5.8/5.8 MB 15.3 MB/s eta 0:00:00
Collecting torchaudio
  Downloading https://download.pytorch.org/whl/cu121/torchaudio-2.1.0%2Bcu121-cp311-cp311-win_amd64.whl (4.0 MB)
    ----- 4.0/4.0 MB 14.3 MB/s eta 0:00:00
Requirement already satisfied: filelock in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (3.12.4)
Requirement already satisfied: typing-extensions in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (4.8.0)
Requirement already satisfied: sympy in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (1.12)
Requirement already satisfied: networkx in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (3.2)
Requirement already satisfied: Jinja2 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (3.1.2)
Requirement already satisfied: fsspec in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torch) (2023.10.0)
Requirement already satisfied: numpy in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torchvision) (1.26.1)
Requirement already satisfied: requests in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torchvision) (2.31.0)
Requirement already satisfied: pillow!=8.3.*,>=5.3.0 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from torchvision) (10.1.0)
Requirement already satisfied: MarkupSafe>=2.0 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from Jinja2->torch) (2.1.3)
Requirement already satisfied: charset-normalizer<4,>=2 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from requests->torchvision) (3.3.1)
Requirement already satisfied: idna<4,>=2.5 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from requests->torchvision) (3.4)
Requirement already satisfied: urllib3<3,>=1.21.1 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from requests->torchvision) (2.0.7)
Requirement already satisfied: certifi>=2017.4.17 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from requests->torchvision) (2023.7.22)
Requirement already satisfied: mpmath>=0.19 in d:\anaconda\envs\yolo_cs2\lib\site-packages (from sympy->torch) (1.3.0)
Installing collected packages: torch, torchvision, torchaudio
  Attempting uninstall: torch
    Found existing installation: torch 2.1.0
    Uninstalling torch-2.1.0:
      Successfully uninstalled torch-2.1.0
  Attempting uninstall: torchvision
    Found existing installation: torchvision 0.16.0
    Uninstalling torchvision-0.16.0:
      Successfully uninstalled torchvision-0.16.0
Successfully installed torch-2.1.0+cu121 torchaudio-2.1.0+cu121 torchvision-0.16.0+cu121

```

Figure 6: Install Pytorch GPU

```

(yolo_cs2) D:\yolo>python
Python 3.11.5 | packaged by Anaconda, Inc. | (main, Sep 11 2023, 13:26:23) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> import torch
>>> torch.__version__
'2.1.0+cu121'
>>> torch.cuda.is_available()
True

```

Figure 7: Check Pytorch GPU version

2.1.2. Executing Training of Model & Detection.

A. Training of model over 100 epochs using the following command.

```

(yolo_cs2) D:\yolo>yolo task=detect mode=train epochs=100 data=data_custom.yaml model=yolov8m.pt imgs=640 batch=8
ultralytics YOLOv8.0.200 Python-3.11.5 torch-2.1.0+cu121 CUDA=0 (NVIDIA GeForce RTX 3050 Laptop GPU, 4096MiB)
Engine/trainer: task=detect, mode=train, model=yolov8m.pt, data=data_custom.yaml, epochs=100, patience=50, batch=8, imgs=640, save=True, save_period=1, cache=False, device=None, workers=8, project=
train, exist_ok=False, pretrained=True, optimizer=auto, verbose=True, seed=0, deterministic=True, single_cls=False, rect=False, cos_lr=False, close_mosaic=10, resume=False, amp=True, fraction=1.0, pr
freeze=None, overlap_mask=True, mask_ratio=4, dropout=0.0, val=True, split_val=, save_json=False, save_hybrid=False, conf=None, iou=0.7, max_det=300, half=False, dnn=False, plots=True, source=None, a
ve_txt=False, save_conf=False, save_crop=False, show_labels=True, show_conf=True, vid_stride=1, stream_buffer=False, line_width=None, visualize=False, augment=False, agnostic_nms=False, classes=None
ks=False, boxes=True, format=torchscript, keras=False, optimize=False, int8=False, dynamic=False, simplify=False, opset=None, workspace=4, nms=False, lr=0.01, lrf=0.01, momentum=0.937, weight_decay
up_epochs=3.0, warmup_momentum=0.8, warmup_bias_lr=0.1, box=7.5, cls=0.5, dfl=1.5, pose=12.0, kobj=1.0, label_smoothing=0.0, nbs=64, hsv_h=0.015, hsv_s=0.7, hsv_v=0.4, degrees=0.0, translate=0.1, sca
r=0.0, perspective=0.0, flipud=0.0, fliplr=0.5, mosaic=1.0, mixup=0.0, copy_paste=0.0, cfg=None, tracker=botsort.yaml, save_dir=runs/detect/train7
Downloading https://ultralytics.com/assets/Arial.ttf to 'C:\Users\Sachet Karkera\AppData\Local\Temp\ultralytics\Arial.ttf'...
100%|#####| 755k/755k [00:00<00:00, 6.15MB/s]
Overriding model.yaml nc=80 with nc=2

      from n      params  module  arguments
      -1  1      1392  ultralytics.nn.modules.conv.Conv  [3, 48, 3, 2]
      1  1      41664 ultralytics.nn.modules.conv.Conv  [48, 96, 3, 2]
      2  2      111360 ultralytics.nn.modules.block.C2f  [96, 96, 2, True]
      3  1      166272 ultralytics.nn.modules.conv.Conv  [96, 192, 3, 2]
      4  4      81312 ultralytics.nn.modules.block.C2f  [192, 192, 4, True]
      5  1      664320 ultralytics.nn.modules.conv.Conv  [192, 384, 3, 2]
      6  1      3248640 ultralytics.nn.modules.block.C2f  [384, 384, 4, True]
      7  1      1991808 ultralytics.nn.modules.conv.Conv  [384, 576, 3, 2]
      8  1      3985920 ultralytics.nn.modules.block.C2f  [576, 576, 2, True]
      9  1      831168 ultralytics.nn.modules.block.SPPF  [576, 576, 5]
     10  1          0 torch.nn.modules.upsampling.Upsample  [None, 2, 'nearest']
     11 [-1, 6] 1      1993728 ultralytics.nn.modules.block.C2f  [1]
     12  1      1993728 ultralytics.nn.modules.block.C2f  [960, 384, 2]
     13  1          0 torch.nn.modules.upsampling.Upsample  [None, 2, 'nearest']
     14 [-1, 4] 1          0 ultralytics.nn.modules.conv.Concat  [1]
     15  1      517632 ultralytics.nn.modules.block.C2f  [576, 192, 2]
     16  1      332160 ultralytics.nn.modules.conv.Conv  [192, 192, 3, 2]
     17 [-1, 12] 1          0 ultralytics.nn.modules.conv.Concat  [1]
     18  1      1846272 ultralytics.nn.modules.block.C2f  [576, 384, 2]
     19  1      1327872 ultralytics.nn.modules.conv.Conv  [384, 384, 3, 2]
     20 [-1, 9] 1          0 ultralytics.nn.modules.conv.Concat  [1]
     21  1      4287104 ultralytics.nn.modules.block.C2f  [960, 576, 2]
     22 [15, 18, 21] 1  3776854 ultralytics.nn.modules.head.Detect  [2, [192, 384, 576]]

Model summary: 295 layers, 25857478 parameters, 25857462 gradients, 79.1 GFLOPs

Transferred 469/475 items from pretrained weights
Freezing layer 'model.22.dfl.conv.weight'
AMP: running Automatic Mixed Precision (AMP) checks with YOLOv8n...
Downloading https://github.com/ultralytics/assets/releases/download/v0.0.0/yolov8n.pt to 'yolov8n.pt'...
100%|#####| 6.23M/6.23M [00:00<00:00, 11.5MB/s]
AMP: checks passed
train: Scanning D:\yolo\train\labels... 5939 images, 84 backgrounds, 0 corrupt: 100%|#####| 5939/5939 [00:00<00:00, 244.3
train: New cache created: D:\yolo\train\labels.cache
val: Scanning D:\yolo\val\labels... 431 images, 12 backgrounds, 0 corrupt: 100%|#####| 431/431 [00:01<00:00, 244.3

```

Figure 8: Train Model

```
momentum' automatically...
optimizer: AdamW(lr=0.001429, momentum=0.9) with parameter groups 77 weight(decay=0.0), 84 weight(decay=0.0005), 83 bias(decay=0.0)
image sizes 640 train, 640 val
using 8 dataloader workers
logging results to runs\detect\train2
starting training for 100 epochs...
```

Epoch	GPU_mem	box_loss	cls_loss	df_l_loss	Instances	Size
1/100	3.67G	1.961	3.026	2.009	16	640: 100% 32/32 [03:57<00:00, 7.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:01<00:00, 0.222s/epoch]
	all	10	20	1	0.3	
2/100	3.88G	1.793	2.335	1.824	19	640: 100% 32/32 [03:59<00:00, 7.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:01<00:00, 0.228s/epoch]
	all	10	20	0.576	0.267	
3/100	3.89G	1.889	2.242	1.883	13	640: 100% 32/32 [03:21<00:00, 6.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:00<00:00, 0.0206s/epoch]
	all	10	20	0.0216	0.2	
4/100	3.88G	1.898	2.139	1.92	22	640: 100% 32/32 [04:02<00:00, 7.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:01<00:00, 0.0116s/epoch]
	all	10	20	0.0169	0.408	
5/100	3.87G	1.821	2.085	1.874	22	640: 100% 32/32 [04:23<00:00, 8.00s/epoch]

Figure 9: Start of Training

Class	Images	Instances	Box(P	R	mAP50	mAP50-95): 100% 1/1 [00:01<00:00, 0.458s/epoch]
all	10	20	0.539	0.454	0.458	0.259
Epoch 99/100	GPU_mem	box_loss	cls_loss	df_l_loss	Instances	Size
	3.84G	0.8058	0.6907	1.129	6	640: 100% 32/32 [05:20<00:00, 10.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:00<00:00, 0.458s/epoch]
	all	10	20	0.54	0.458	0.458 0.262
Epoch 100/100	GPU_mem	box_loss	cls_loss	df_l_loss	Instances	Size
	3.91G	0.8425	0.7344	1.146	5	640: 100% 32/32 [05:46<00:00, 10.00s/epoch]
	Class	Images	Instances	Box(P	R	mAP50 mAP50-95): 100% 1/1 [00:02<00:00, 0.459s/epoch]
	all	10	20	0.541	0.458	0.459 0.257

100 epochs completed in 8.818 hours.
Optimizer stripped from runs\detect\train2\weights\last.pt, 52.0MB
Optimizer stripped from runs\detect\train2\weights\best.pt, 52.0MB

Validating runs\detect\train2\weights\best.pt...
Ultralytics YOLOv8.0.200 Python-3.11.5 torch-2.1.0+cu121 CUDA:0 (NVIDIA GeForce RTX 3050 Laptop GPU, 4096MiB)
Model summary (fused): 218 layers, 25841497 parameters, 0 gradients, 78.7 GFLOPs

Class	Images	Instances	Box(P	R	mAP50	mAP50-95): 100% 1/1 [00:03<00:00, 0.715s/epoch]
all	10	20	0.596	0.667	0.715	0.348
gun	10	10	0.934	1	0.995	0.683
wall	10	8	0.435	0.5	0.489	0.195
enemy	10	2	0.42	0.5	0.662	0.166

Speed: 2.2ms preprocess, 314.5ms inference, 0.0ms loss, 2.5ms postprocess per image
Results saved to runs\detect\train2
Learn more at <https://docs.ultralytics.com/modes/train>

Figure 10: End of training

B. Detection of Suspected Player video by using the following command.

```
(yolo_cs2) D:\yolo>yolo task=detect mode=predict model=yolov8m_custom.pt show=True conf=0.5 source=1.mp4
Ultralytics YOLOv8.0.200 Python-3.11.5 torch-2.1.0+cu121 CUDA:0 (NVIDIA GeForce RTX 3050 Laptop GPU, 4096MiB)
Model summary (fused): 218 layers, 25841497 parameters, 0 gradients, 78.7 GFLOPs
```

video 1/1 (1/17795) D:\yolo\1.mp4: 384x640 (no detections), 147.4ms
video 1/1 (2/17795) D:\yolo\1.mp4: 384x640 (no detections), 19.4ms
video 1/1 (3/17795) D:\yolo\1.mp4: 384x640 (no detections), 19.5ms
video 1/1 (4/17795) D:\yolo\1.mp4: 384x640 (no detections), 20.9ms
video 1/1 (5/17795) D:\yolo\1.mp4: 384x640 (no detections), 20.1ms
video 1/1 (6/17795) D:\yolo\1.mp4: 384x640 (no detections), 19.3ms
video 1/1 (7/17795) D:\yolo\1.mp4: 384x640 (no detections), 18.7ms
video 1/1 (8/17795) D:\yolo\1.mp4: 384x640 (no detections), 18.7ms
video 1/1 (9/17795) D:\yolo\1.mp4: 384x640 (no detections), 17.4ms
video 1/1 (10/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.8ms
video 1/1 (11/17795) D:\yolo\1.mp4: 384x640 (no detections), 17.3ms
video 1/1 (12/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.6ms
video 1/1 (13/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.7ms
video 1/1 (14/17795) D:\yolo\1.mp4: 384x640 (no detections), 17.9ms
video 1/1 (15/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.3ms
video 1/1 (16/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.0ms
video 1/1 (17/17795) D:\yolo\1.mp4: 384x640 (no detections), 17.0ms
video 1/1 (18/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.3ms
video 1/1 (19/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.8ms
video 1/1 (20/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.2ms
video 1/1 (21/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.9ms
video 1/1 (22/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.5ms
video 1/1 (23/17795) D:\yolo\1.mp4: 384x640 (no detections), 16.2ms

Figure 11: Detection

2.2 Software Requirements for Aimbot Web Application

The Following are the Software requirements –

How to use: **pip install -r requirements.txt**

Flask==3.0.0

numpy==1.26.1

scipy==1.11.3

2.2.1. Code

A. Below is the app.py

```
app.py > index
1  from flask import Flask, render_template, request, redirect, url_for
2  import numpy as np
3  from scipy import stats
4
5  app = Flask(__name__)
6
7  def is_valid_number_list(s):
8      try:
9          numbers = list(map(int, s.split(',')))
10         return all(isinstance(num, int) for num in numbers)
11     except ValueError:
12         return False
13
14  @app.route('/', methods=['GET', 'POST'])
15  def index():
16      result = None
17      error_message = None
18
19      if request.method == 'POST':
20          pitch_data = request.form['pitch']
21          yaw_data = request.form['yaw']
22
23          if not is_valid_number_list(pitch_data) or not is_valid_number_list(yaw_data):
24              error_message = "Please enter valid comma-separated numbers."
25
26          else:
27              pitch_data = np.array(list(map(int, pitch_data.split(','))))
28              yaw_data = np.array(list(map(int, yaw_data.split(','))))
29
30              min_pitch, max_pitch = -89, 89
31              min_yaw, max_yaw = -180, 180
32
33              pitch_zscores = np.abs(stats.zscore(pitch_data))
34              yaw_zscores = np.abs(stats.zscore(yaw_data))
35
36              zscore_threshold = 2
37
38              unnatural_movements = np.logical_or(pitch_zscores > zscore_threshold, yaw_zscores > zscore_threshold)
39
40              frames_with_unnatural_movements = np.where(unnatural_movements)[0] + 1
41
42              if len(frames_with_unnatural_movements) > 0:
43                  result = f"Aimbot detected in frames: {frames_with_unnatural_movements}"
44              else:
45                  result = "No Aimbot detected."
46
47          return render_template('index.html', result=result, error_message=error_message)
48
49  if __name__ == '__main__':
50      app.run(debug=True)
51
```

Figure 12: Application Code

B. Below is the HTML for the same:


```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Aimbot Detection</title>
7   <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/animate.css/4.1.1/animate.min.css">
8   <style>
9     body {
10       font-family: 'Arial', sans-serif;
11       background: linear-gradient(to right, #f25682, #2f88ed);
12       text-align: center;
13       margin: 50px;
14       color: #fff;
15     }
16
17     h1 {
18       color: #343a40;
19     }
20
21     form {
22       max-width: 400px;
23       margin: auto;
24       background-color: #fff;
25       padding: 20px;
26       border-radius: 8px;
27       box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
28     }
29
30     label {
31       display: block;
32       margin-bottom: 10px;
33       color: #495957;
34     }
35
36     input {
37       width: 100%;
38       padding: 10px;
39       margin-bottom: 20px;
40       box-sizing: border-box;
41     }

```

Figure 13: Code for web page

```

41   }
42
43   button {
44     background-color: #007bff;
45     color: #fff;
46     border: none;
47     padding: 10px 20px;
48     cursor: pointer;
49     border-radius: 4px;
50   }
51
52   p {
53     margin-top: 40px;
54     color: #2c2e2a7;
55     font-weight: bold;
56   }
57 </style>
58 </head>
59 <body>
60   <h1 class="animate__animated animate__fadeInDown">Aimbot Detection </h1>
61   <form method="post" action="/" class="animate__animated animate__fadeInUp">
62     <label for="pitch">Enter pitch values (comma-separated):</label>
63     <input type="text" name="pitch" id="pitch" required autocomplete="off">
64     <br>
65     <label for="yaw">Enter yaw values (comma-separated):</label>
66     <input type="text" name="yaw" id="yaw" required autocomplete="off">
67     <br>
68     <button type="submit">Detect Aimbot</button>
69   </form>
70
71   {% if error_message %}
72   <p class="error-message">{{ error_message }}</p>
73   {% endif %}
74   {% if result %}
75   <p class="animate__animated animate__fadeInUp">{{ result }}</p>
76   {% endif %}
77 </body>
78 </html>
79
80

```

Figure 14: Code for web page

3. Results.

3.1. Training Results From YOLOV8

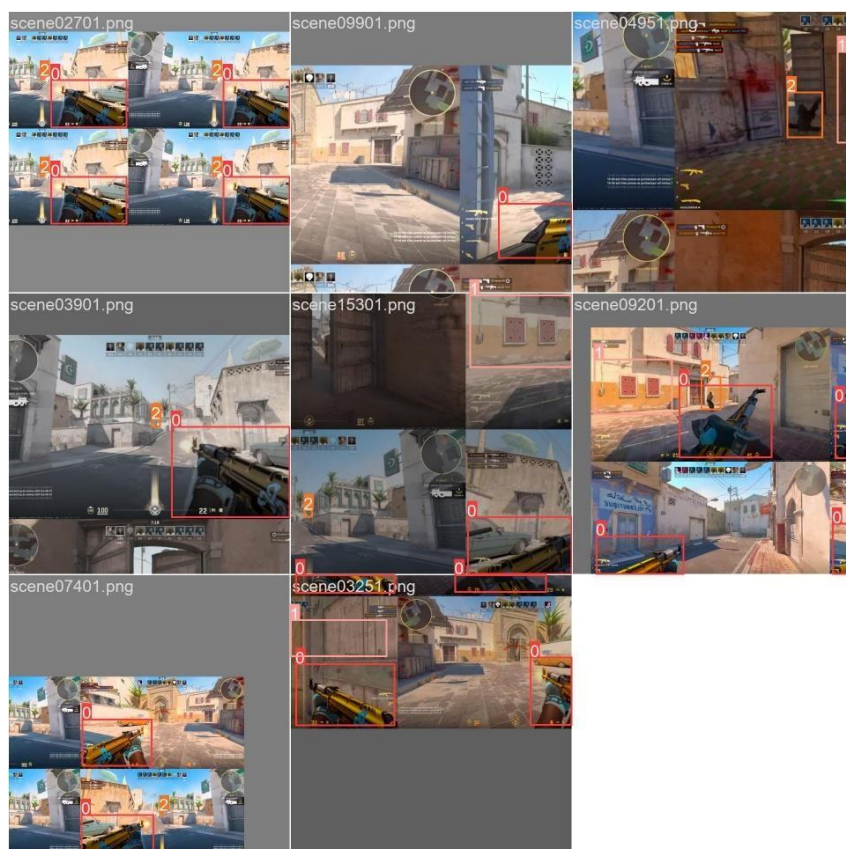


Figure 15: Detection Result 1

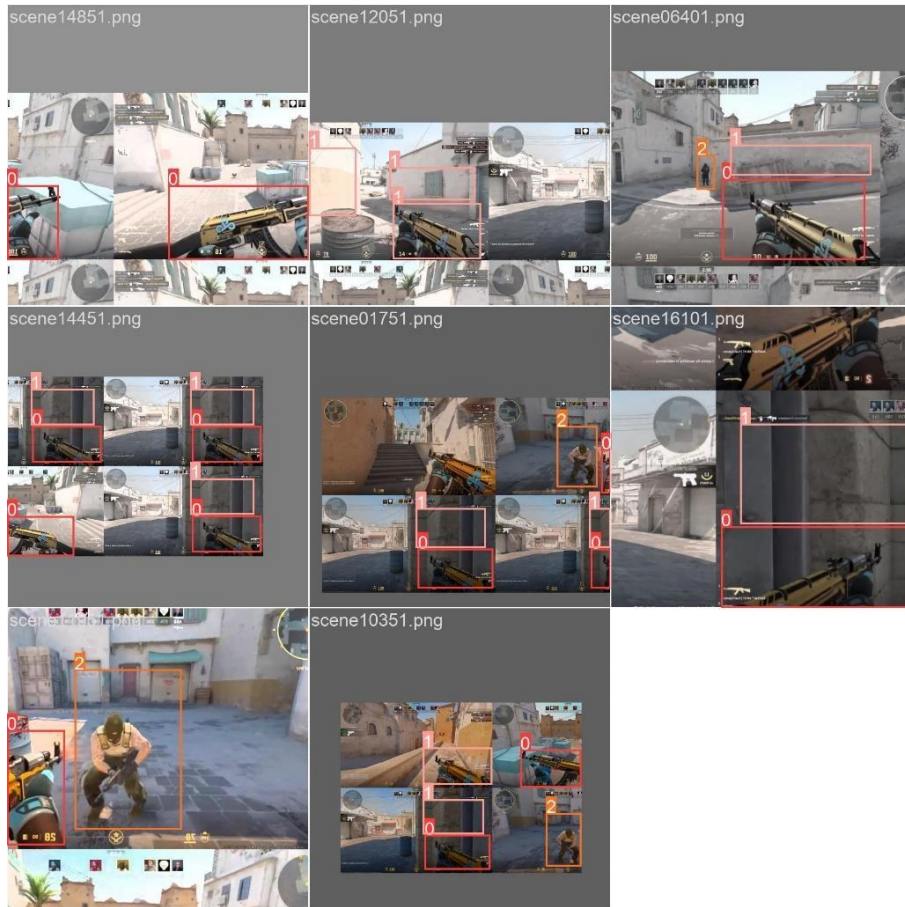


Figure 16: Detection Result 2

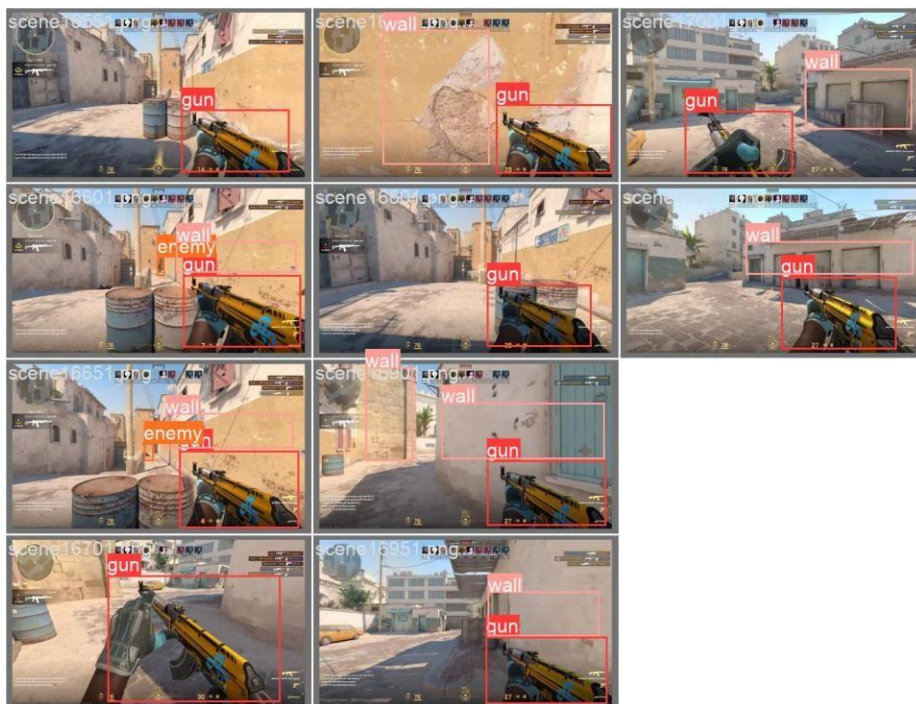


Figure 17: Detection Result 3

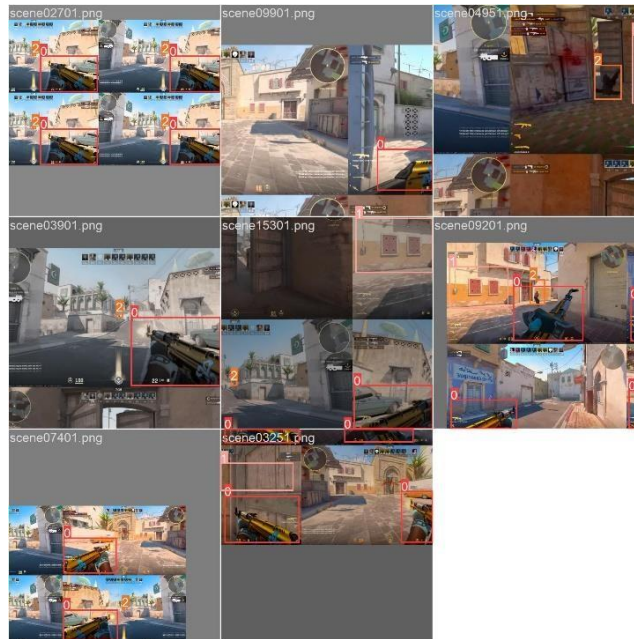


Figure 18: Detection Result 4

3.2. Output:

Aimbot Detection

Enter pitch values (comma-separated):

-10, 5, 2, 15, -130, 40, 23, 60, 70, 10, 2, -5, -15, -30

Enter yaw values (comma-separated):

170, 175, 178, 250, 189, 0, 5, 10, -10, -20, -175, -178, -18, -19

Detect Unnatural Movements

Aimbot detected in frames: [4]

Figure 19: Aimbot Detected

Aimbot Detection

Enter pitch values (comma-separated):

-10, 5, 2, 30, 40, 23, 60, 70, 10, 2, -5, -15, -30

Enter yaw values (comma-separated):

170, 175, 178, 50, 0, 5, 10, -10, -20, -175, -178, -18, -19

Detect Unnatural Movements

No Aimbot detected.

Figure 20: Aimbot Not Detected