AI VIET NAM – COURSE 2024

Helmet Object Detection - Project

Ngày 2 tháng 7 năm 2024

Ngày thực hiện:	02/07/2024
Người thực hiện:	Đinh Thị Tâm
Nguồn:	AIO2024 - Week4
Nguồn dữ liệu (nếu có):	Link of Data Sources
Từ khóa:	Helmet Object Detection - Yolo10vn
Người tóm tắt:	Đinh Thị Tâm

I. Tự luận

1. Câu 1:

   (a) Code

```python
# -*- coding: utf-8 -*-
"""Project_Yolo10.ipynb

Automatically generated by Colab.

Original file is located at
    https://colab.research.google.com/drive/17ZNR0v9F23_1_N1uJDUjYajpH4iNGOUw
"""

# Commented out IPython magic to ensure Python compatibility.
! git clone https://github.com/THU-MIG/yolov10.git
# %cd yolov10
! pip install -q -r requirements.txt
! pip install -e .

! pip install numpy

!pip install pytorch-lightning

!wget https://github.com/THU-MIG/yolov10/releases/download/v1.1/yolov10n.pt

"""Khởi tạo mô hình"""

from ultralytics import YOLOv10

MODEL_PATH = 'yolov10n.pt'
model = YOLOv10 ( MODEL_PATH )

! gdown '1tr9PSRRdlC2pNir7jsYugpSMG-7v32VJ' -O './images/'
```

```python
31  IMG_PATH = './images/HCMC_Street.jpg'
32  result = model ( source = IMG_PATH )[0]
33
34  result.save ('./images/HCMC_Street_predict.png')
35
36  YOUTUBE_VIDEO_PATH = 'https://youtu.be/wqPSsu7XQ74'
37  video_result = model(source = YOUTUBE_VIDEO_PATH)
38
39  !gdown '1twdtZEfcw4ghSZIiPDypJurZnNXzMO7R'
40
41  !gdown '1twdtZEfcw4ghSZIiPDypJurZnNXzMO7R'
42  !mkdir safety_helmet_dataset
43  !unzip -q '/content/yolov10/Safety_Helmet_Dataset.zip' -d '/content/yolov10/
        safety_helmet_dataset'
44
45  # Commented out IPython magic to ensure Python compatibility.
46  ! git clone https://github.com/THU-MIG/yolov10.git
47  # %cd yolov10
48  ! pip install -q -r requirements.txt
49  ! pip install -e .
50
51  ! wget https://github.com/THU-MIG/yolov10/releases/download/v1.1/yolov10n.pt
52
53  from ultralytics import YOLOv10
54  MODEL_PATH = 'yolov10n.pt'
55  model = YOLOv10 ( MODEL_PATH )
56
57  YAML_PATH = '../safety_helmet_dataset/data.yaml'
58  EPOCHS = 50
59  IMG_SIZE = 256
60  BATCH_SIZE = 8
61
62  model.train (data = YAML_PATH ,
63    epochs = EPOCHS ,
64    batch = BATCH_SIZE ,
65    imgsz = IMG_SIZE )
66
67  TRAINED_MODEL_PATH = '/content/yolov10/runs/detect/train3/weights/best.pt'
68  model = YOLOv10(TRAINED_MODEL_PATH)
69
70  model.val(data=YAML_PATH ,
71            imgsz=IMG_SIZE ,
72            split='test')
73
74  # https://github.com/googlecolab/colabtools/issues/3409
75  import locale
76  locale.getpreferredencoding = lambda: "UTF-8"
77
78  from google.colab.patches import cv2_imshow
79
80  TRAINED_MODEL_PATH = '/content/yolov10/runs/detect/train3/weights/best.pt'
81  model = YOLOv10(TRAINED_MODEL_PATH)
82
83  IMAGE_URL = 'https://ips-dc.org/wp-content/uploads/2022/05/Black-Workers-Need
        -a-Bill-of-Rights.jpeg'
84  CONF_THRESHOLD = 0.3
85  results = model.predict(source=IMAGE_URL ,
86                          imgsz=IMG_SIZE ,
87                          conf=CONF_THRESHOLD)
88  annotated_img = results[0].plot()
```

```
89
90  cv2_imshow ( annotated_img )
91
```

(b) Kết quả thực thi

Hình 1: Helmet Detected by Yolo10vn

II. Câu hỏi trắc nghiệm

Điền trực tiếp trên google form