YOLOv5 / DETR object detection tutorial

YOLOv5

Training (You can refer to YOLOv5 website)

I train YOLOv5 model locally, just follow the steps below (use cmd command line)

```
git clone https://github.com/ultralytics/yolov5.git
pip install -r requirements.txt
# you can also use "JSON_to_txt.py" if you need to convert json file into txt file
```

1. Place your datasets under the folder you want to use
2. Modify the path setting in the hw1.yaml under the data folder
3. Go to YOLOv5 website, download the pretrain model (I use the YOLOv5x)

```
# run main.py to train the model
python3 train.py --img 640 --epochs 200 --batch-size 12 --data hw1.yaml --weights
yolov5x.pt # this is the hyperparameter I use, can be modify yourself
```

Inference

You can follow the steps just like hw1.sh

Draw the bounding boxes on image

Just using the detect.py (you can modify the path and weight)

```
python3 detect.py --weights ../YOLOv5_checkpoint.pt --source
../yolov5_datasets/test_image
```

DETR

Training (You can refer to DETR website)

I train DETR model locally, just follow the steps below (use cmd command line)

```
git clone https://github.com/facebookresearch/detr.git
pip install -r requirements.txt
```

1. Place your datasets under the folder you want to use, and don't forget to modify the path setting in the main.py
2. Modify the class numbers under the models/detr.py
3. Go to DETR website, download the pretrain model (I use the DETR-R50)

```
# Convert the class numbers in pretrain model (you can modify the class numbers
you want in "detr_pretrain_convert_class_to_8.py")
python3 detr_pretrain_convert_class_to_8.py

# run main.py to train the model
python3 main.py --coco_path ../detr_datasets/train/ --epochs 150 --batch_size 2 --
resume detr-r50_8.pth # this is the hyperparameter i use, can be modify yourself
```

Inference

You can follow the steps just like hw1.sh

Draw the bounding boxes on image

Just using the DETR_BBOX_img.py (you can modify the path, weight and class numbers)

```
python3 DETR_BBOX_img.py
```

The image will look just like this with both method: