

Tutorial of AlphaPose Retrain

開源智造
Murphy

Outline

- ❖ 介紹 AlphaPose

- ❖ 介紹 COCO

- ❖ 實作

- AlphaPose retrain on Colab

- 如何標註自己的 dataset ? 介紹 COCO-Annotator

先安裝好 docker, docker-compose

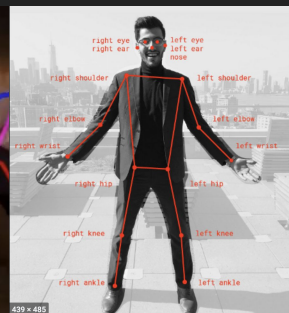
Sli.do

<https://reurl.cc/7oNYMd>



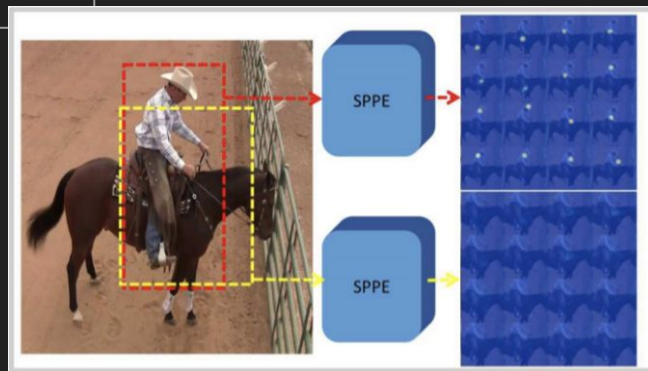
AlphaPose 是什麼 ... ?

- 是一個 Pose Estimation(姿態識別) Model



Open Source Sys.	準確率	速度
OpenPose(CMU)	60mAP	10FPS
Mask-RCNN(FAIR)	67mAP	5FPS
AlphaPose	71mAP	20FPS

- 基於 **top-down** 的方式作人體動作識別
 - a. 先找到定界框(Bounding Box)->SSD/YOLO
 - b. 再送到人體動作識別網路>SPPE



COCO(Common Object in Context) 又是什麼 ... ?

- 微軟建立的 dataset
- 主要用於物件偵測、姿態識別(detection, segmentation, keypoints)等任務



info@cocodataset.org

Home People **Dataset** Tasks Evaluate

Tools

COCO API

Images

2014 Train images [83K/13GB]
2014 Val images [41K/6GB]
2014 Test images [41K/6GB]
2015 Test images [81K/12GB]
2017 Train images [118K/18GB]
2017 Val images [5K/1GB]
2017 Test images [41K/6GB]
2017 Unlabeled images [123K/19GB]

Annotations

2014 Train/Val annotations [241MB]
2014 Testing Image info [1MB]
2015 Testing Image info [2MB]
2017 Train/Val annotations [241MB]
2017 Stuff Train/Val annotations [1.1GB]
2017 Panoptic Train/Val annotations [821MB]
2017 Testing Image info [1MB]
2017 Unlabeled Image info [4MB]

▼ annotations-3

captions_val2014.json

captions_train2014.json

person_keypoints_val2014.json

person_keypoints_train2014.json

instances_val2014.json

instances_train2014.json

給 Pose Estimation Task 使用的 !
包含:

```
{  
  info, licenses, images,  
  annotations, categories  
}
```

```
{
  "info": {
    "description": "COCO 2017 Dataset",
    "url": "http://cocodataset.org",
    "version": "1.0",
    "year": 2017,
    "contributor": "COCO Consortium",
    "date_created": "2017/09/01"
  },
  "licenses": [
    {
      "url": "http://creativecommons.org/licenses/by-nc-sa/2.0/",
      "id": 1,
      "name": "Attribution-NonCommercial-ShareAlike License",
      "url": "...",
      "id": 2,
      "name": "..."
    }
  ],
  "images": [
    {
      "license": 4,
      "file_name": "000000397133.jpg",
      "coco_url": "http://images.cocodataset.org/val2017/000000397133.jpg",
      "height": 427,
      "width": 640,
      "date_captured": "2013-11-14 17:02:52",
      "flickr_url": "http://farm7.staticflickr.com/6116/6255196340_da26cf2c9e_...",
      "id": 397133
    }
  ]
}
```

info : 描述整個 dataset 的資訊, 之後不會用到

licenses: license 的 id 和網址名稱, 之後也不會用到

images: 圖片資訊, 會用到四個東西。
file_name: 圖片在對應 train/val/test 資料夾的檔名;
height/width: 圖片的寬高;
id: 圖片唯一的 id, 在 COCO API 終會用到。

```

"annotations": [
{
  "segmentation": [[125.12,539.69,140.94,522.43...]],
  "num_keypoints": 10,
  "area": 47803.27955,
  "iscrowd": 0,
  "keypoints": [0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,142,309,1,177,320,2,191,398...],
  "image_id": 425226,
  "bbox": [73.35,206.02,300.58,372.5], "category_id": 1,
  "id": 183126
}, ...]
,
"categories": [
{
  "supercategory": "person",
  "id": 1,
  "name": "person",
  "keypoints": ["nose","left_eye","right_eye","left_ear","right_ear","left_shoulder",
  "skelton": [[16,14],[14,12],[17,15],[15,13],[12,13],[6,12],[7,13],[6,7],[6,8],[7,
}]]
}

```

annotations:所有圖片上所有物體的標注都統一儲存在這裡，格式隨著 task 而不同。

keypoints:

[3*k](k:keypoints數量), 第一和第二元素代表 x,y座標。第三元素v, v=0代表該關鍵點未標注(x=y=v=0), v=1帶標該關節點被標注但不可見(被遮擋), v=2代表該關鍵點被標注且可見。

categories: 只有一個類別"supercategory": "person"。

keypoints 是一個長度為k的list, 包含關鍵點的名稱。

skeleton定義關鍵點之間的關係(比如左手腕和左手肘是連接的)

Colab

<https://reurl.cc/d5gOm8>



如何創造自己的 COCO dataset ... ?

-- COCO Annotator

1. 確認自己有沒有 docker 和 docker-compose

```
docker -v
```

```
docker-compose -v
```

2. 把 COCO Annotator 抓下來

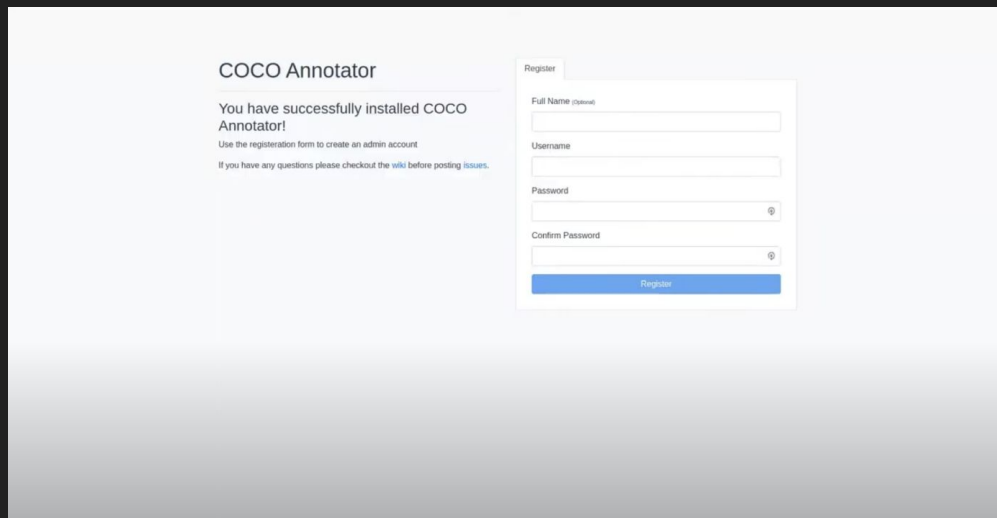
```
git clone https://github.com/jsbroks/coco-annotator.git
```

```
cd coco-annotator
```

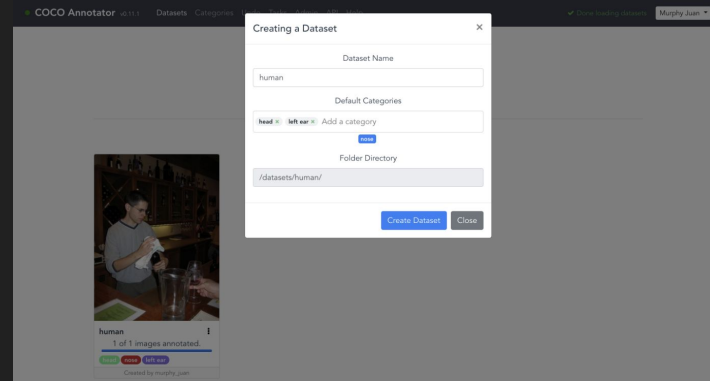
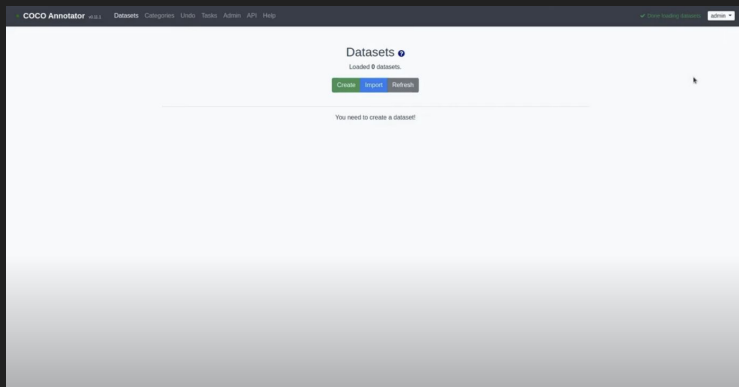
```
docker-compose up
```

```
http://localhost:5000/
```

3. 創建帳號

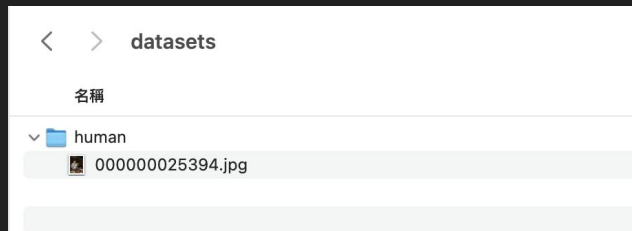


4. 建立 dataset (輸入 dataset 的名稱、輸入 category 用 enter 分開)



5. 到 coco-annotator 的 repo inport images

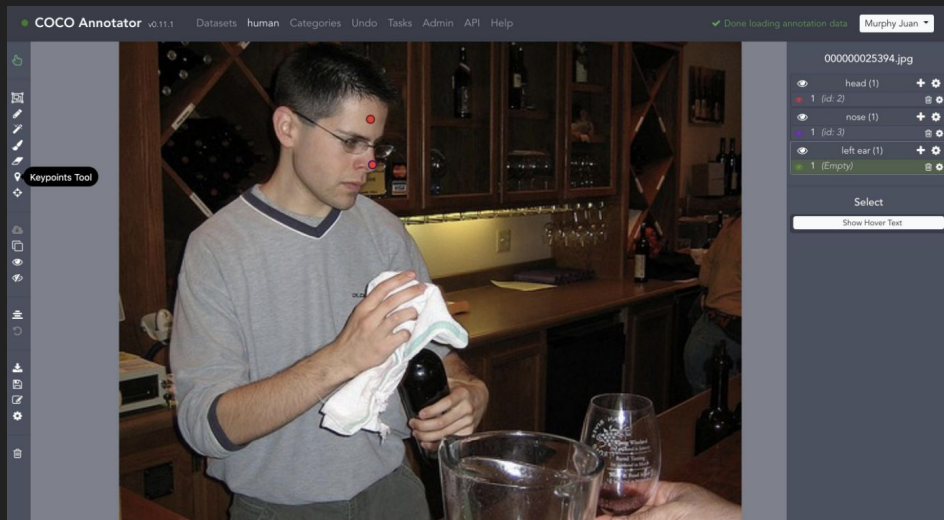
```
cd coco-annotator/datasets/human
```



6. 開始標註：

點擊圖片進入標註畫面->點擊右側類別->選擇左側標註工具(keypoints tool,)->畫記

需要 Segmentation, Bounding box(bbox), Keypoints

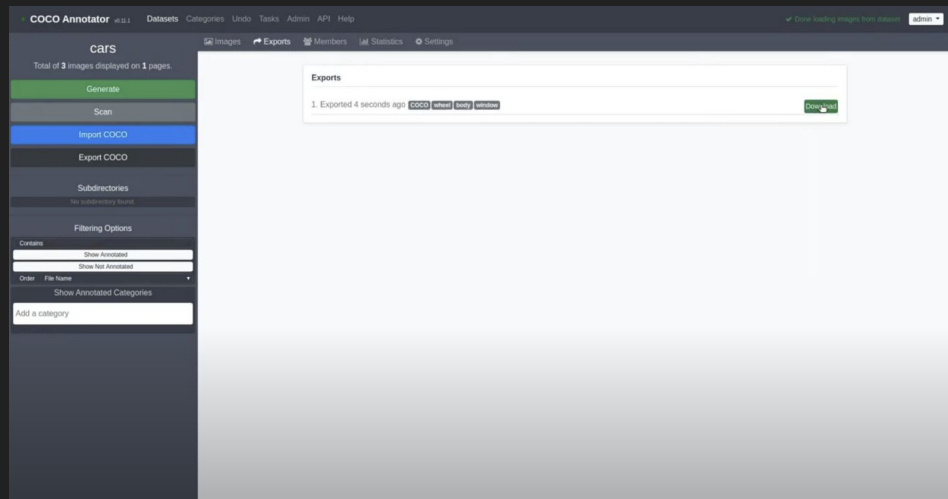
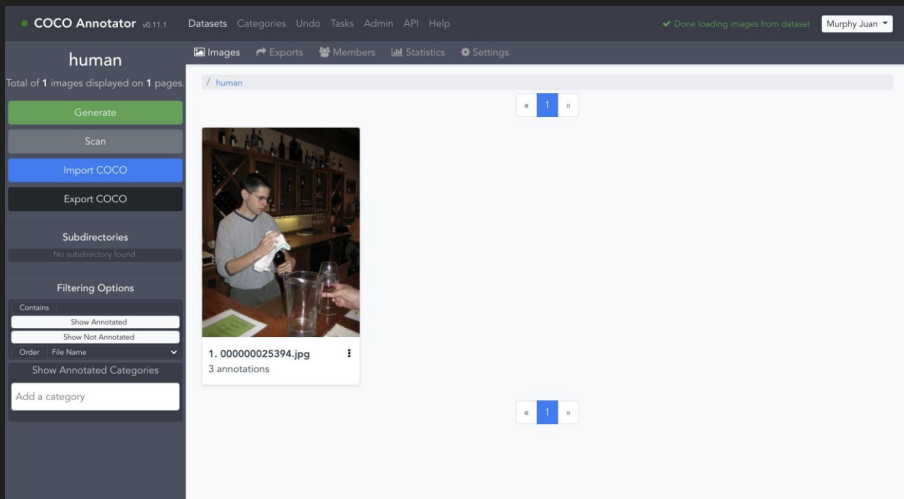


7. 儲存

點擊左下角的 save

8. 輸出

標註完成後回到 dataset 畫面，點擊 COCO Export



來試試看吧！



Thank you!

Hope you like today's tutorial!

