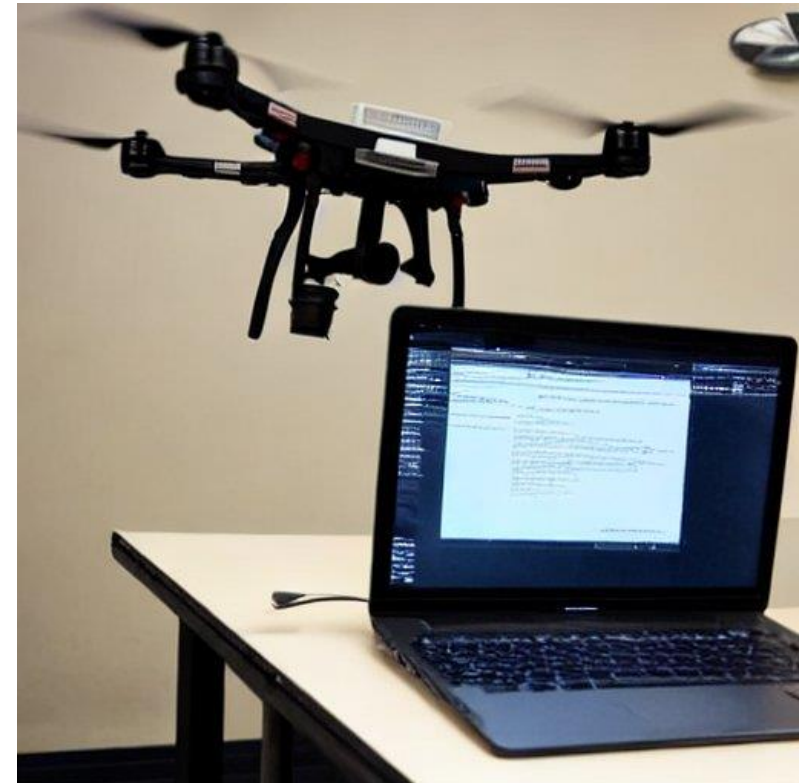


Human Centric Computing - UAV Lab

Class : 2nd week, 3rd week, 4th week

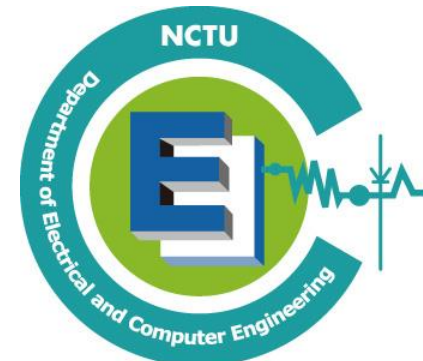
- Lab1 : UAV Control Lab
 - Principles of UAV flight control
 - UAV flying through web sockets
- Lab2 : UAV Communication Lab
 - UAV swarm control
 - UAV video streaming
- Lab3 : UAV Computing Lab
 - UAV + AI application





國立陽明交通大學

NATIONAL YANG MING CHIAO TUNG UNIVERSITY



Human Centric Computing UAV Computing Lab

教授：王蒞君

助教：邱佳詮、廖秉豪、唐晨皓

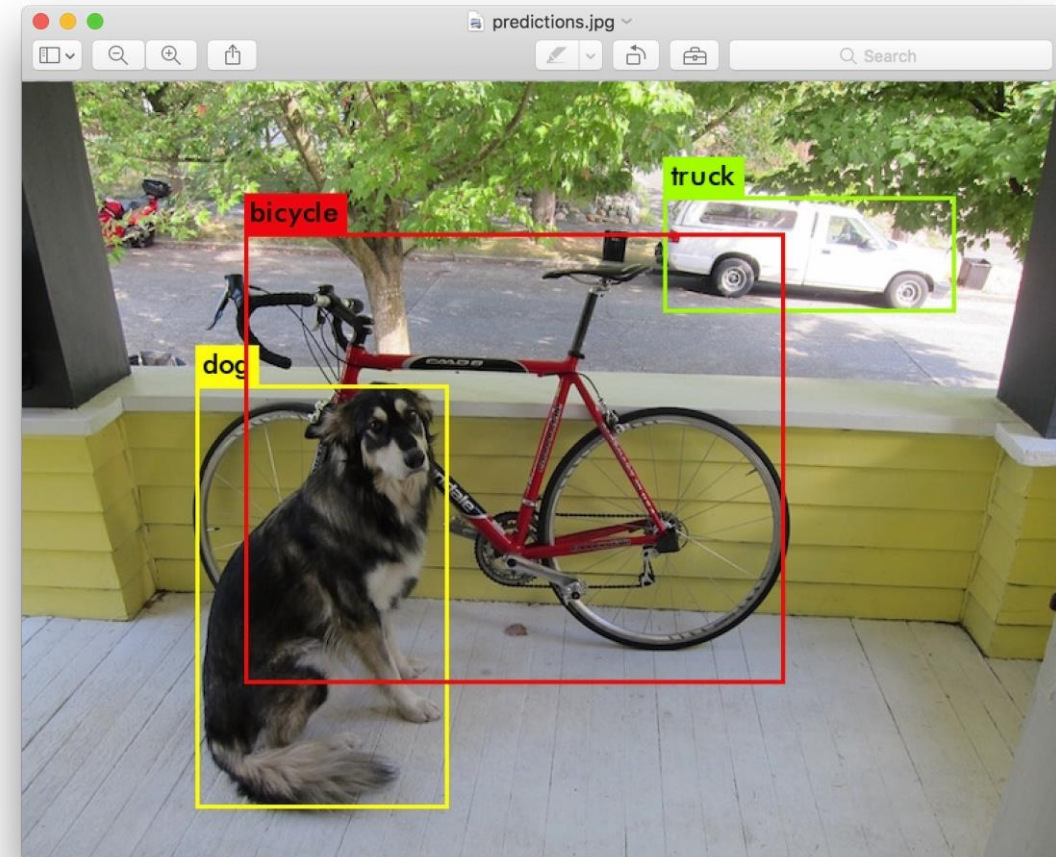


Objectives

- Learn to use YOLO for real-time object detection on your computer
- Control the flight path of the UAV based on the detection results

What is YOLO

- You only look once (YOLO)
- Real-time object detection

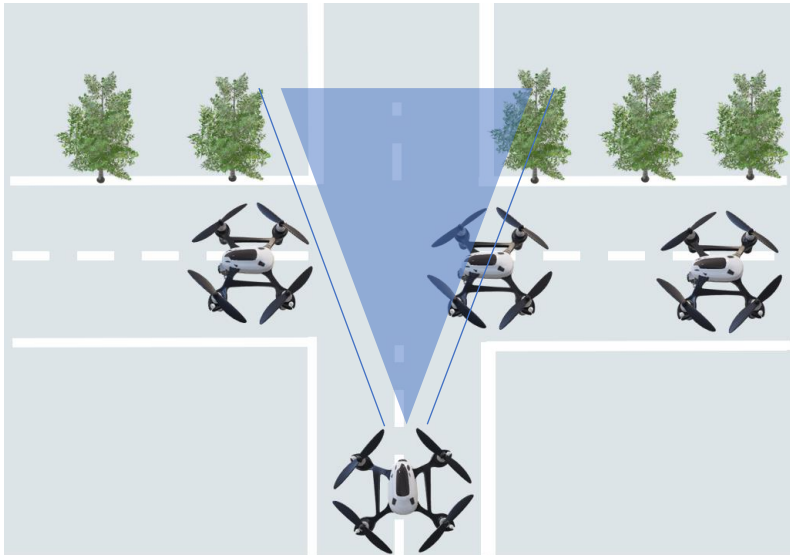


Demo



小建議

- 注意Tello影像延遲跟Tello指令對不對的上 (如果只看電腦螢幕飛行)
- 注意Tello 飛行前進，YOLO影像辨識目標物是否一致 (影像中物體等比例對大)
- 盡量預先規畫路徑
- 小心下面情況





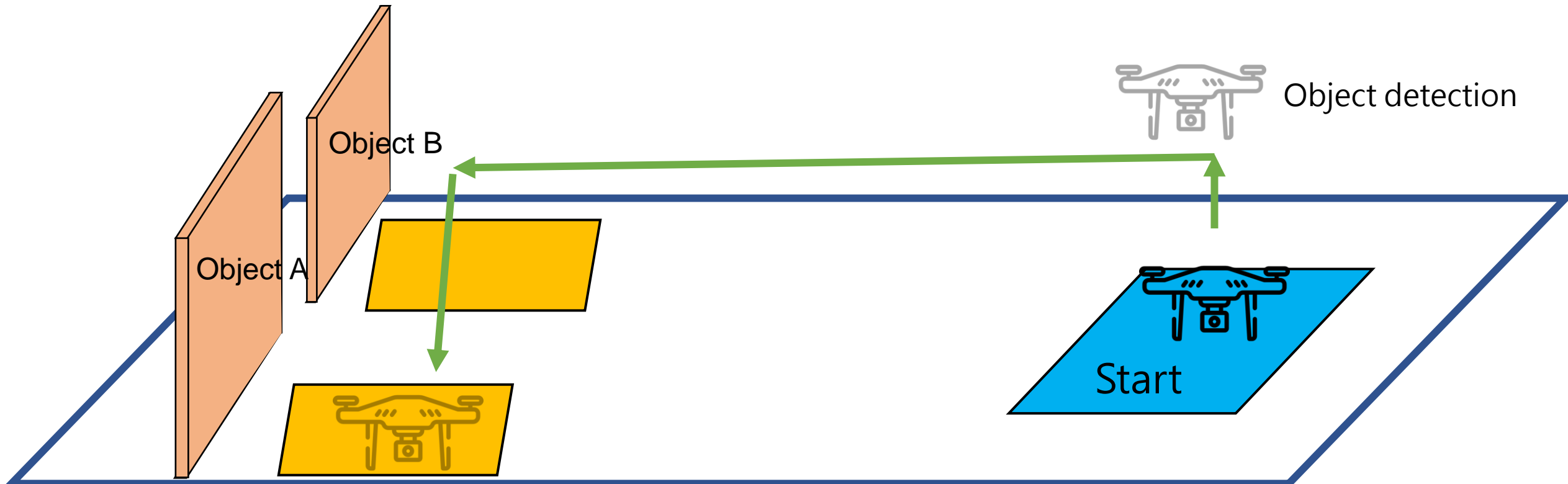
Environment setup

- <https://hackmd.io/@s87315teve/S1J4qGpQd>



Check point

Check point 3-1 Object detection + flight control



Hint

- Only need to edit detect.py
- Make the program to support the streaming format of Tello (hint: udp)
- Location and label name

```
# Write results
for *xyxy, conf, cls in reversed(det):
    if save_txt: # Write to file
        xywh = (xyxy2xywh(torch.tensor(xyxy).view(1, 4)) / gn).view(-1).tolist() # normalized xywh
        line = (cls, *xywh, conf) if save_conf else (cls, *xywh) # label format
        with open(txt_path + '.txt', 'a') as f:
            f.write((' %g ' * len(line)).rstrip() % line + '\n')

    if save_img or save_crop or view_img: # Add bbox to image
        c = int(cls) # integer class
        label = None if hide_labels else (names[c] if hide_conf else f'{names[c]} {conf:.2f}')
        annotator.box_label(xyxy, label, color=colors(c, True))
    if save_crop:
        save_one_box(xyxy, imc, file=save_dir / 'crops' / names[c] / f'{p.stem}.jpg', BGR=True)
```