

VEHICLE DETECTION AND COUNTING

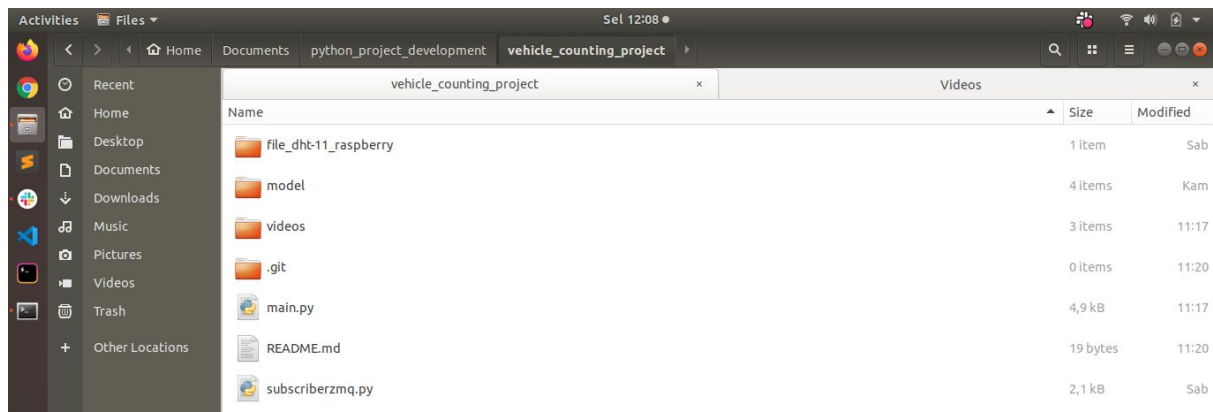
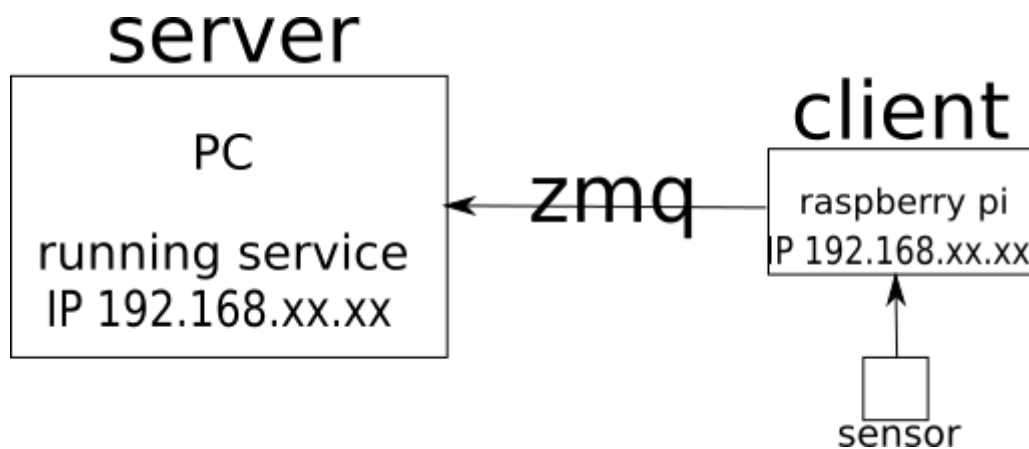
The project is vehicle counting and detection. This project uses deep learning with the YOLO method with a dataset of cars, buses, trucks, motorcycles, and bicycles. This project will also display the street name, temperature and humidity of the dht-11 sensor sent by raspberries.

The system configuration uses a client server where the server is a PC that will run the vehicle detection service, and raspberries as a client that sends temperature and humidity sensor information to the server.

Specification minimum

core i7

ram 4gb



server side

1. make sure you have python environment dependency
 - opencv (pip3 install opencv-python)
 - zmq (pip3 install pyzmq)
2. check your ip address (exp: 192.168.x.xx)

3. try to running service

python main.py

4. if you want to change file video just change name of file in script

```
38
39 vs = cv2.VideoCapture('videos/bandung_road5.mp4')
40
41 W = None
42 H = None
43 font = cv2.FONT_HERSHEY_SIMPLEX
44
```

if an error occurs, install the required library listed on the terminal

client side

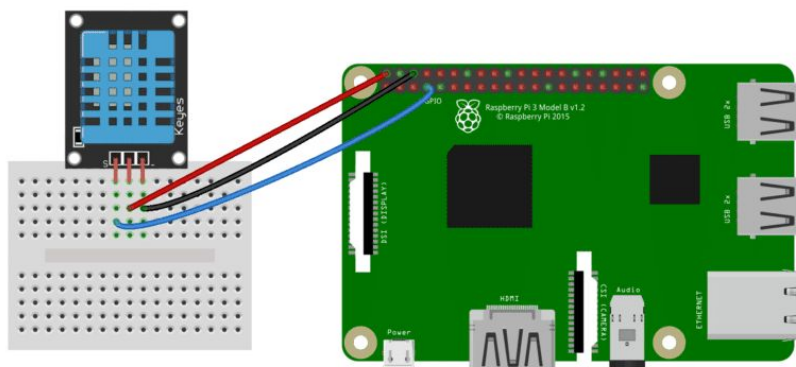
1. copy file in folder file_dht-11_raspberry to your raspberry

2. now check your connection with the server

ping 192.168.xx.xx

```
pi@raspberrypi: ~/Documents/flask_1ot/flask/test
$ ping 192.168.18.178
PING 192.168.18.178 (192.168.18.178) 56(84) bytes of data:
64 bytes from 192.168.18.178: icmp_seq=1 ttl=64 time=2.97 ms
64 bytes from 192.168.18.178: icmp_seq=2 ttl=64 time=781 ms
64 bytes from 192.168.18.178: icmp_seq=3 ttl=64 time=188 ms
64 bytes from 192.168.18.178: icmp_seq=4 ttl=64 time=33.2 ms
64 bytes from 192.168.18.178: icmp_seq=5 ttl=64 time=29.6 ms
64 bytes from 192.168.18.178: icmp_seq=6 ttl=64 time=51.7 ms
64 bytes from 192.168.18.178: icmp_seq=7 ttl=64 time=176 ms
```

3. make sure your the sensor has been connected with raspberry



4. change ip address in script publisherzmqdht11.py with your server ip address (exp:192.168.xx.xx)

if you see like image below your data has been sent to the server.

[illegible]

close the service.

Running main program

1. in server side running main.py
python main.py
2. if there is no error you will see the window like this

The image shows a Linux desktop environment with a terminal window and a video preview window.

Terminal Window:

```
erwin@erwin: ~/Documents/python_project_development/vehicle_counting_project
(base) erwin@erwin:~/Documents/python_project_development/vehicle_counting_project$ python yolo_video.py
[INFO] loading model from disk...
[INFO] could not determine # of frames in video
[INFO] no approx. completion time can be provided
{
  "street": "JALAN RAYA PASIR KOJA KOTA BANDUNG",
  "sensors": [
    {
      "bTemp": 29.0 C Humidity: 65.0 %"
    }
  ],
  "vehicle_detection": [
    {
      "total_detect": 16,
      "car": 8,
      "truck": 8,
      "bus": 0,
      "motorbike": 0,
      "bicycle": 0
    }
  ]
}

"street": "JALAN RAYA PASIR KOJA KOTA BANDUNG",
"sensors": [
  {
    "bTemp": 29.0 C Humidity: 65.0 %"
  }
],
"vehicle_detection": [
  {
    "total_detect": 16,
    "car": 8,
    "truck": 8,
    "bus": 0,
    "motorbike": 0,
    "bicycle": 0
  }
]
}

"street": "JALAN RAYA PASIR KOJA KOTA BANDUNG"
```

Video Preview Window:

The video preview window shows a street scene with various vehicles labeled. The labels include "truck", "car", "bus", "motorbike", and "bicycle". The video is titled "Dinas Perhubungan Kota Bandung" and shows a street scene with a traffic light and a bus stop. The video is dated "09-04-2020 15:04:50".

The video preview window also displays a summary of detected vehicles:

```

JALAN RAYA PASIR KOJA
bTemp: 29.0 C Humidity: 65.0 %
Detected Vehicles: 16
Car: 8
Truck: 8
Bus: 0
Motorbike: 0
Bicycle: 0

```

The video preview window also displays the coordinates of the detected vehicles:

```

(x=349, y=501 ~ R:67 G:58 B:47

```