

EZPARKY

RASPBERRY PI 4B DETEKSI OBJEK MENGGUNAKAN YOLOV5 DENGAN DATASET VISDRONE PYTORCH

1. PEMASANGAN RASPBERRRY PI 4B

- Unduh raspberry pi imager
<https://www.raspberrypi.com/software/>



Install Raspberry Pi OS using Raspberry Pi Imager

Raspberry Pi Imager is the quick and easy way to install Raspberry Pi OS and other operating systems to a microSD card, ready to use with your Raspberry Pi.

Download and install Raspberry Pi Imager to a computer with an SD card reader. Put the SD card you'll use with your Raspberry Pi into the reader and run Raspberry Pi Imager.

[Download for Windows](#)

[Download for macOS](#)

[Download for Ubuntu for x86](#)

To install on **Raspberry Pi OS**, type
`sudo apt install rpi-imager`
in a Terminal window.

- Unduh Raspberry Pi 4 os Debian bookworm 64-bit dengan microSD
- Bahan :

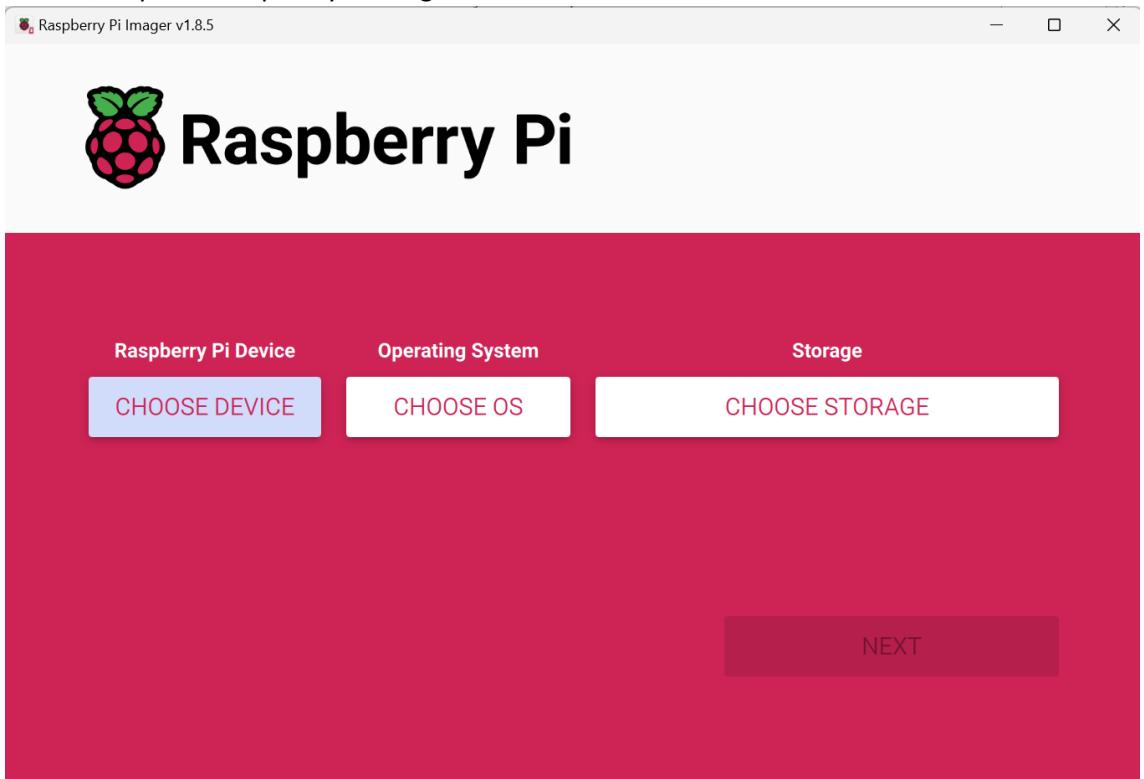
- microSD



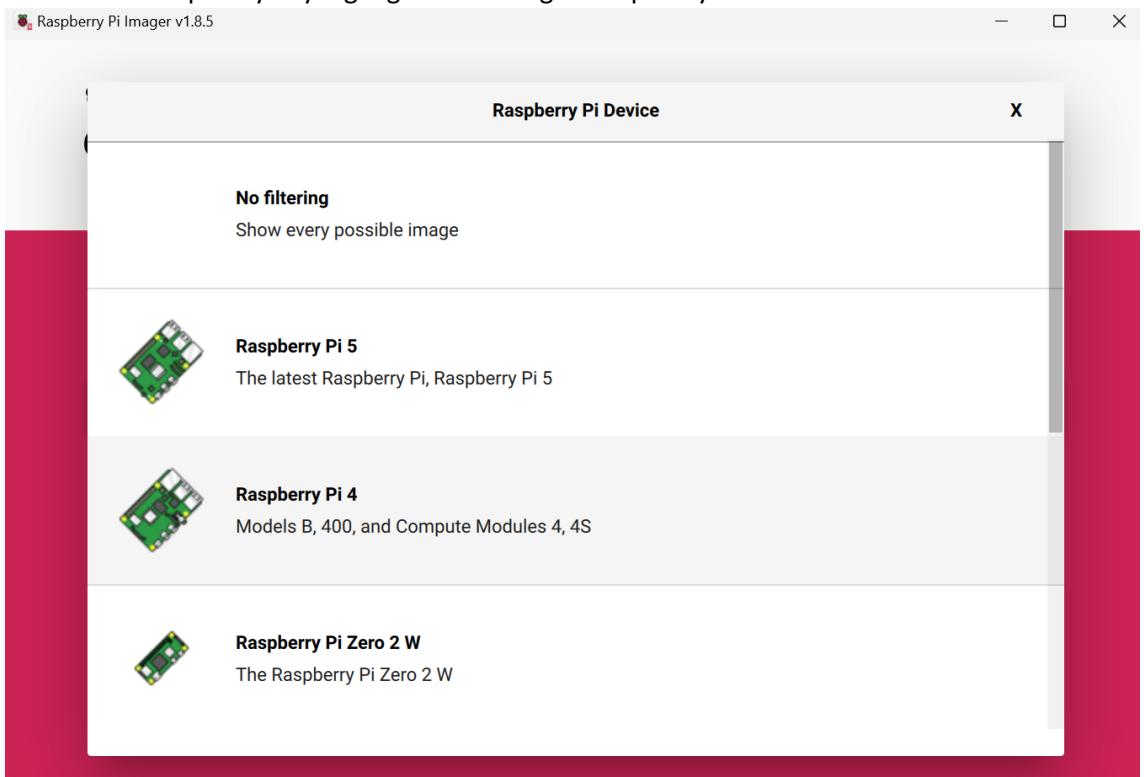
- USB ke microSD



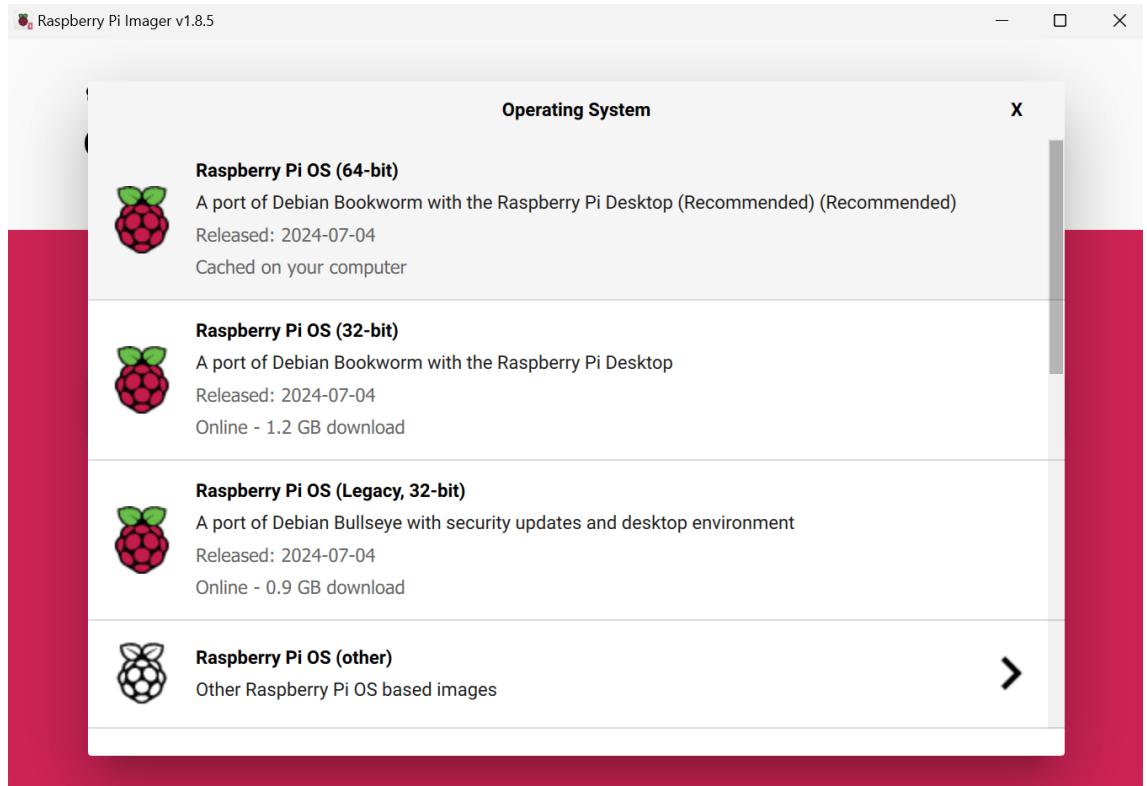
- Masuk ke aplikasi Raspberry Pi imager



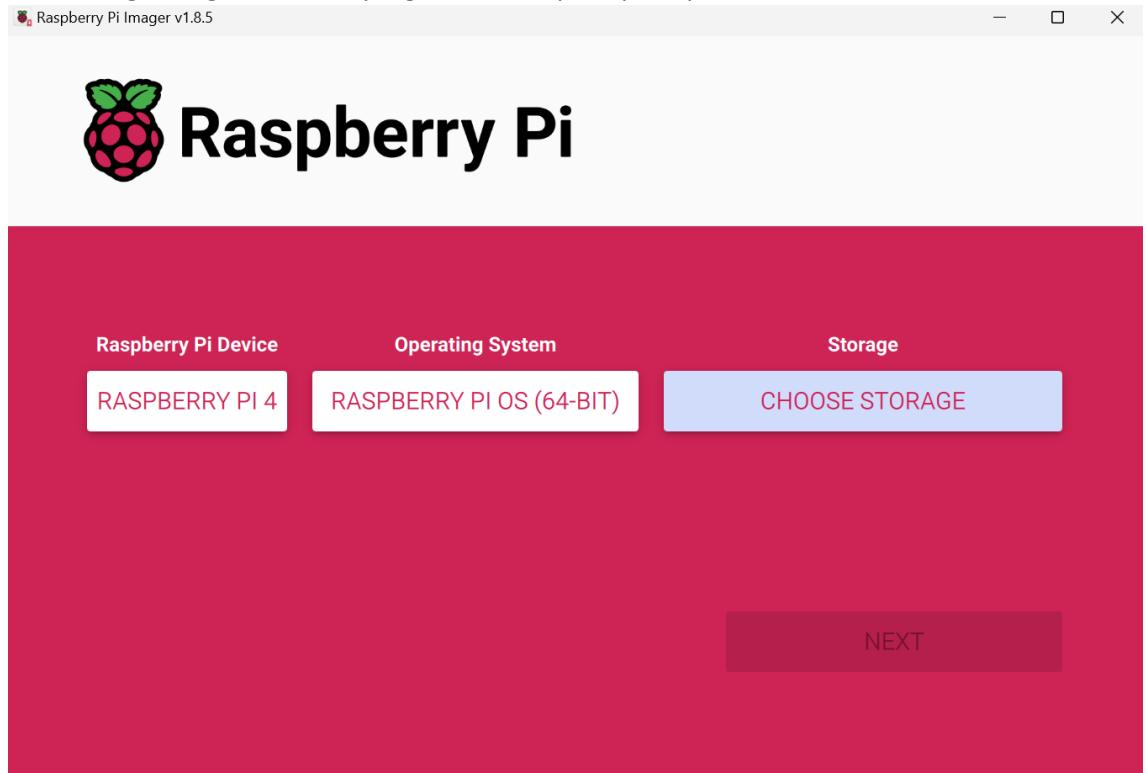
- Pilih device Raspberry Pi yang digunakan dengan Raspberry Pi 4



- Pilih OS yang digunakan dengan Raspberry Pi OS (64-bit)



- Pilih storage dengan microSD yang sudah disiapkan pada poin ke 2



- Tekan next untuk mengunduh dengan catatan semua isi baik itu folder maupun file yang berada dalam microSD akan hilang

- Menjalankan program Raspberry Pi 4B

Bahan :

- Monitor support HDMI



- Kabel mikro HDMI ke HDMI



- Isi username dan password kalian dengan username dan password yang baru
- Isi lokasi dengan negara dan daerah tempat tinggal kalian
- Isi wifi yang akan digunakan
- Update software

2. MEMBUAT IP STATIS

- Masuk ke terminal
- Ketikkan **nmtui**
- Pilih **Edit a connection**
- Pilih wifi yang kalian gunakan
- Klik tombol arah ke bawah pada keyboard kalian sampai menemukan **IPv4 CONFIGURATION**
- Ubah **Automatic** menjadi **Manual**
- Klik **Show**
- Isi **Adresses** dengan IP kalian saat ini dengan mengeceknya pada ikon wifi di kanan atas (pilih more info dan info connection) lupa kalimatnya 😊
- Isi **Gateway** dan **DNS servers** dengan IP wifi kalian
- Klik tombol arah ke bawah pada keyboard kalian sampai menemukan **OK**
- Klik **Back**
- Klik **Quit**
- Ketikkan **reboot** pada terminal

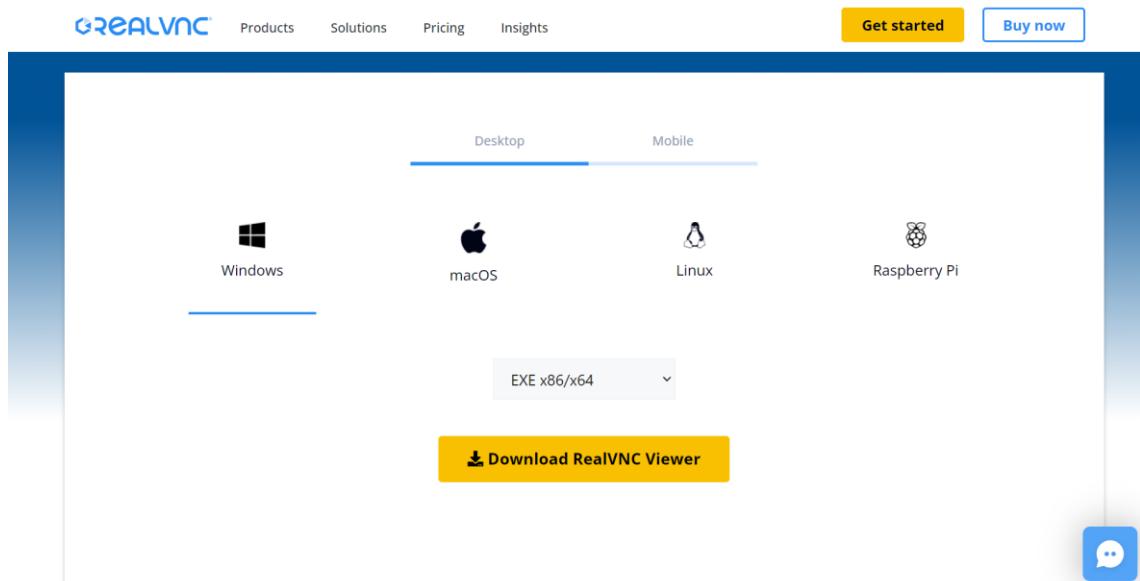
Referensi :

<https://pimylifeup.com/raspberry-pi-static-ip-address/>

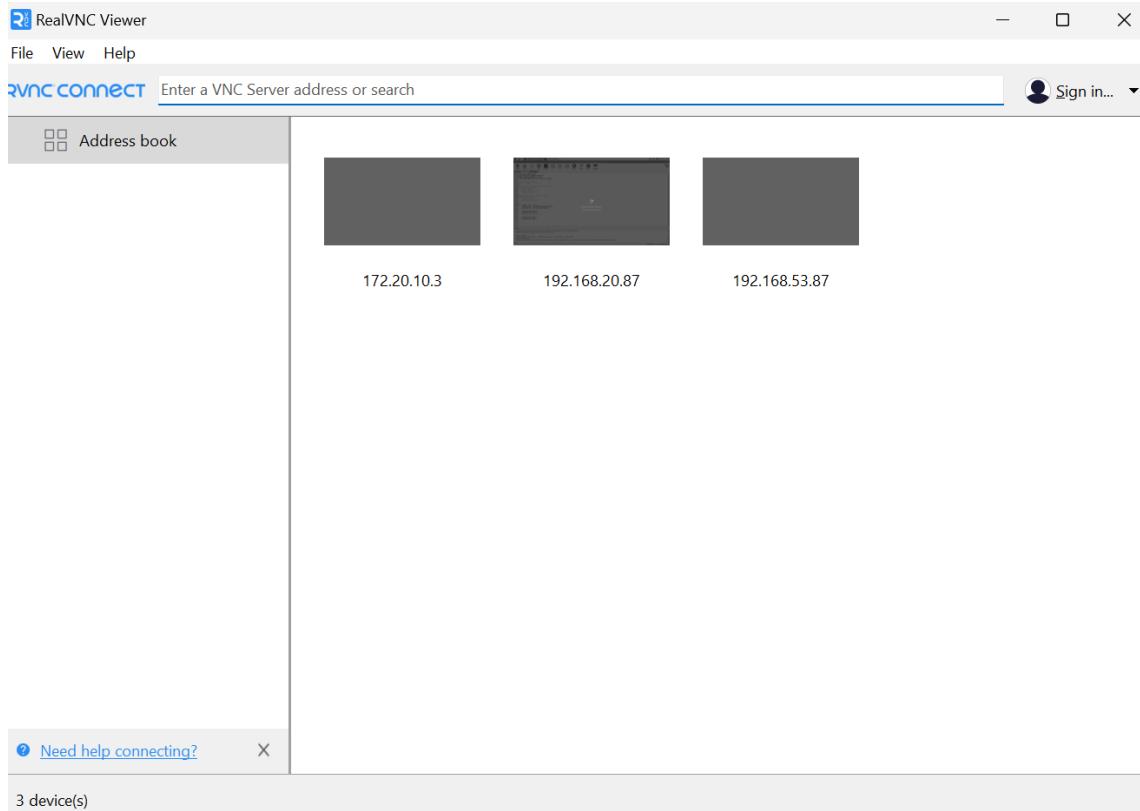
3. MENJALANKAN RASPBERRY PI DENGAN VNC

- Klik ikon raspberry pi di kiri atas
- Next (aktifkan vnc dalam raspberry pi)
- Unduh VNC Viewer

https://www.realvnc.com/en/connect/download/viewer/?lai_vid=yALnMEDWdt5&lai_sr=0-4&lai_sl=1



- Samakan jaringan pada laptop dengan jaringan di Raspberry Pi
- Masukkan IP raspberry pada langkah **MEMBUAT IP STATIS** poin kedelapan



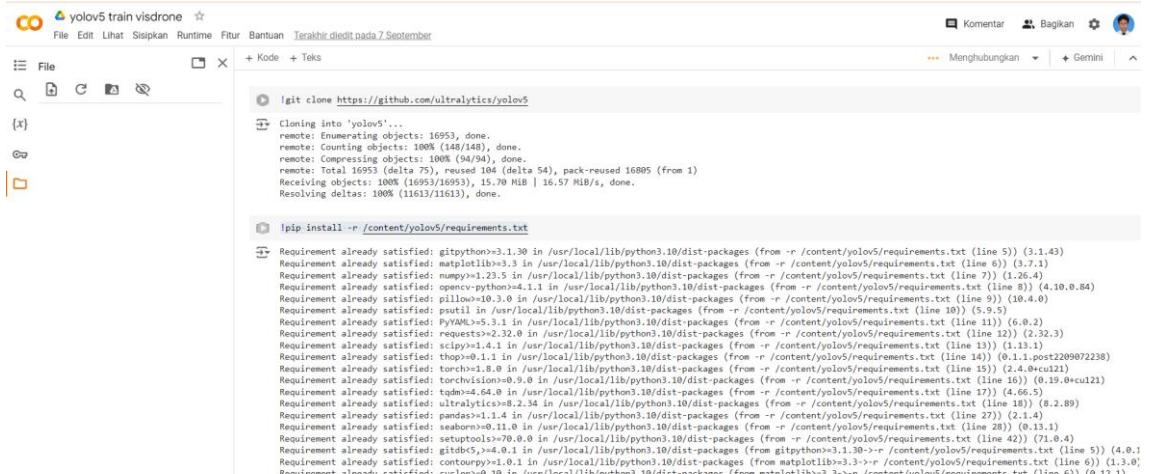
- Raspberry Pi bisa dioperasikan pada laptop tanpa menggunakan kabel mikro HDMI ke HDMI dan monitor

4. MENGOTOMATISKAN PIGPIOD SAAT RASPBERRY PI DINYALAKAN

- Masuk ke terminal
- Ketikkan **sudo systemctl enable pigpiod**
- Ketikkan **sudo systemctl start pigpiod**
- Ketikkan **reboot**

5. MELATIH MODEL VISDRONE DENGAN YOLOV5 PADA GOOGLE COLAB

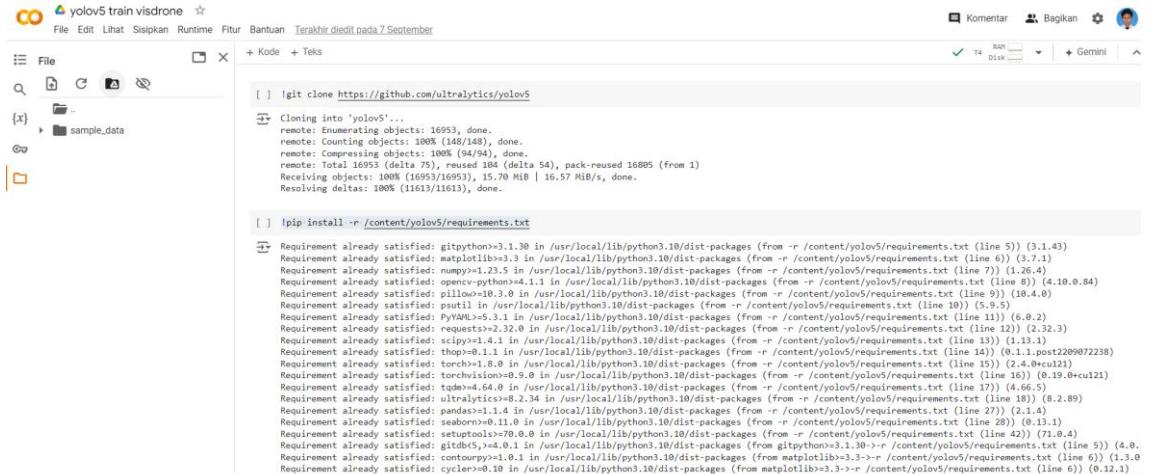
- Buka google colab pada laptop kalian
- Klon repository yolov5 dengan mengetikkan !git clone <https://github.com/ultralytics/yolov5>
- Unduh library yang dibutuhkan oleh yolov5 dengan mengetikkan !pip install -r /content/yolov5/requirements.txt
- Melatih dataset visdrone menggunakan yolov5 dengan mengetikkan !python /content/yolov5/train.py --img 640 --batch 16 --epochs 3 --data /content/yolov5/data/visdrone.yaml. catatan, disini menggunakan batch dan epoch yang tergolong cukup kecil agar tidak memberatkan Raspberry Pi saat melakukan deteksi
- Hubungkan google colab dengan google drive kalian dengan mengeklik ikon folder



```
git clone https://github.com/ultralytics/yolov5
Cloning into 'yolov5'...
remote: Counting objects: 16953, done.
remote: Compressing objects: 100% (54/54), done.
remote: Total 16953 (delta 75), reused 104 (delta 54), pack-reused 16805 (from 1)
Receiving objects: 100% (16953/16953), 15.70 MB | 16.57 MB/s, done.
Resolving deltas: 100% (11613/11613), done.

!pip install -r /content/yolov5/requirements.txt
Requirement already satisfied: gipython>=3.1.30 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 5)) (3.1.43)
Requirement already satisfied: matplotlib>1.3 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 6)) (3.7.1)
Requirement already satisfied: numpy>1.16.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 7)) (1.26.4)
Requirement already satisfied: opencv-python>4.1.1 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 8)) (4.1.0.84)
Requirement already satisfied: pillow>10.3.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 9)) (10.4.0)
Requirement already satisfied: psutil>1.0.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 10)) (5.9.5)
Requirement already satisfied: PyYAML>5.3.1 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 11)) (6.0.2)
Requirement already satisfied: requests>2.32.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 12)) (2.32.3)
Requirement already satisfied: scikit-image>0.18.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 13)) (0.18.9)
Requirement already satisfied: torch>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 14)) (0.1.1.post2009072238)
Requirement already satisfied: torchvision>0.9.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 15)) (0.9.0+cu121)
Requirement already satisfied: torchvision>0.9.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 16)) (0.19.0+cu211)
Requirement already satisfied: tqdm>4.64.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 17)) (4.66.5)
Requirement already satisfied: ultralytics>0.34 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 18)) (0.8.289)
Requirement already satisfied: setuptools>53.1.2 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 19)) (59.9.1)
Requirement already satisfied: seaborn>0.11.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 20)) (0.11.1)
Requirement already satisfied: setupools>70.0.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 21)) (70.1.1)
Requirement already satisfied: gtdbtk5>4.0.1 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 22)) (4.0.1)
Requirement already satisfied: contourpy>1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib>3.3>->/content/yolov5/requirements.txt (line 6)) (1.0.2)
Requirement already satisfied: scikit-learn>1.0.0 in /usr/local/lib/python3.10/dist-packages (from -r /content/yolov5/requirements.txt (line 7)) (1.0.0)
Requirement already satisfied: fonttools>4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib>3.3>->/content/yolov5/requirements.txt (line 8)) (4.53)
Requirement already satisfied: kisun&lt;>1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib>3.3>->/content/yolov5/requirements.txt (line 9)) (1.0.1)
```

- Klik ikon google drive



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```

- Pindahkan dataset visdrone yang sudah dilatih pada path yolov5/runs/train/exp ke google drive kalian dengan menggesernya

6. KLOK YOLOV5 DI RASPBERRY PI

- Masuk ke terminal
- Ketikkan git clone <https://github.com/ultralytics/yolov5>
- Ketikkan cd yolov5
- Ketikkan sudo pip3 install -r requirements.txt –break-system-packages untuk mengunduh library yang dibutuhkan yolov5
- Downgrade torch dan torchvision untuk menghindari deprecated dengan mengetikkan sudo pip3 install torch==2.3.1 torchvision==0.18.1

7. MEMINDAHKAN DATASET VISDRONE DARI GOOGLE DRIVE KE RASPBERRY PI

- Untuk memindahkan bisa langsung dengan login google drive di Raspberry Pi menggunakan chromium dan menguduh dataset visdrone yang sudah dipindahkan pada langkah **MELATIH MODEL VISDRONE DENGAN YOLOV5 PADA GOOGLE COLAB** poin 7 atau melalui laptop yang tahapannya sama akan tetapi membutuhkan flask disk sebagai perantara antara laptop dengan Raspberry Pi