

Tablet Recognition using Deep Learning

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Outline

- Background
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- Datasets
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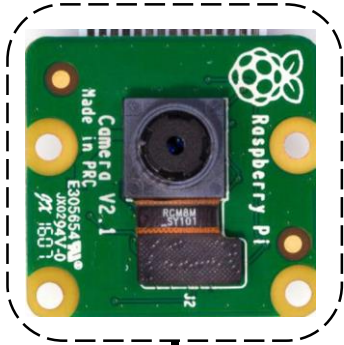
Background



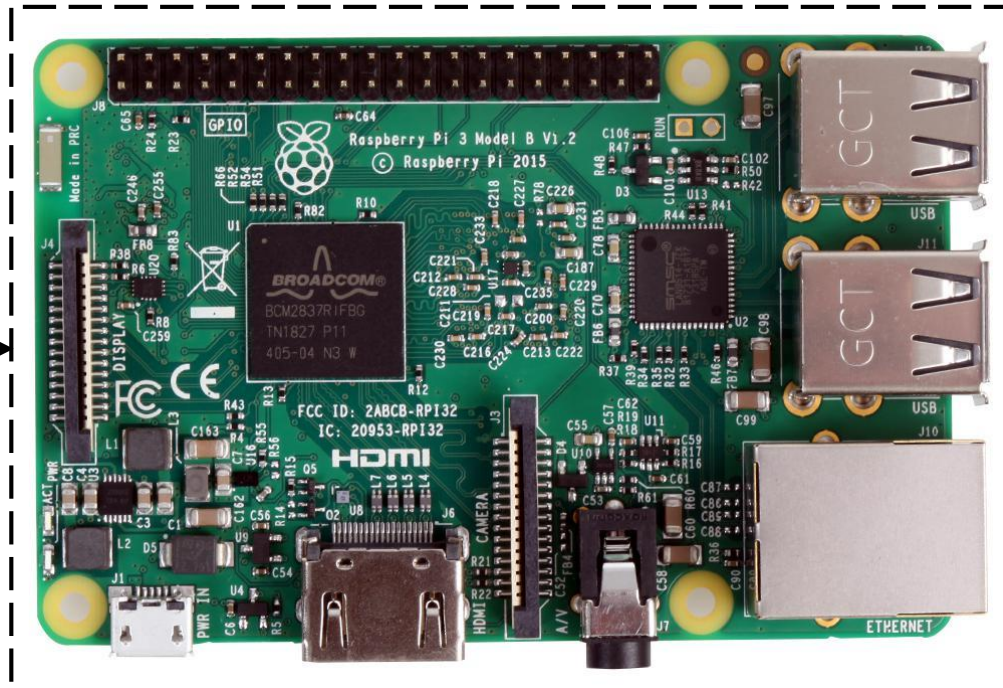
Mother, these are your pills, right?

Design System ("Prototype")

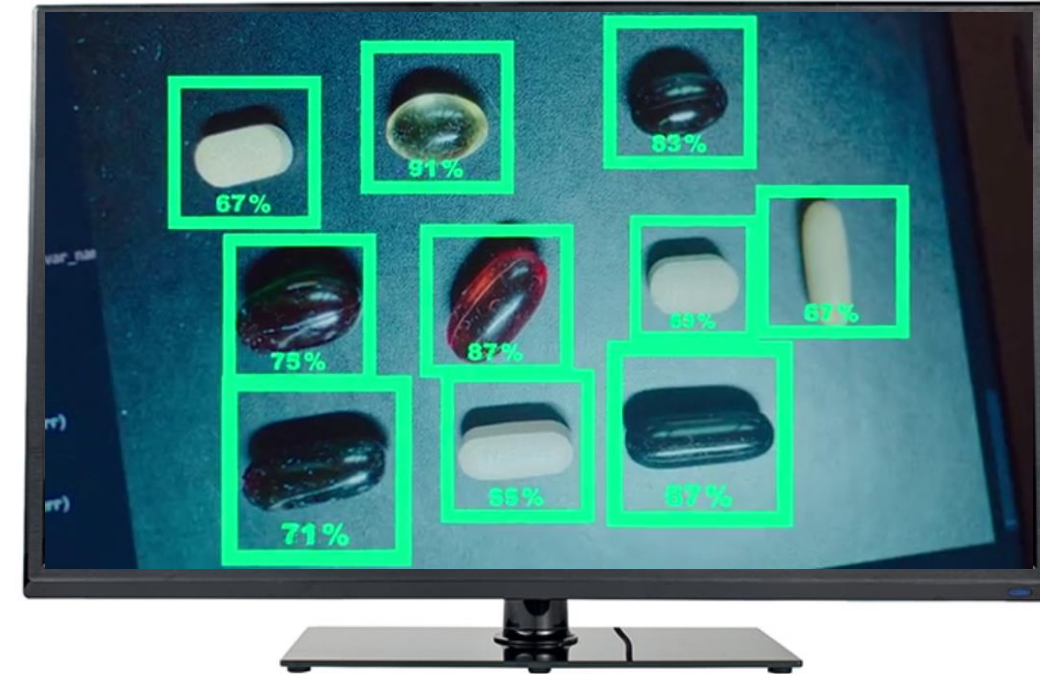
Raspberry Pi Camera



Raspberry Pi 3



LCD



Datasets

- Metformin “Diabetes”
- Simvastatin “Kolesterol”
- Amlodipine “Darah Tinggi”
- FG Troches “Radang Tenggorokan”
- Allopurinol “Asam Urat”
- Bodrex “Sakit Kepala”
- Ibuprofen “Pereda Nyeri”








4 Main Step

1. Collecting Data
2. Annotation
3. Training (Google Colab)
4. Embed AI in Raspberry Pi 3 Model B V1.2

1. Collecting Data

Name

-  Bulat 1
-  Bulat 2
-  Bulat 3
-  Bulat 4
-  Lonjong 1



Lonjong 1 (15 Data)



Bulat 1 (10 Data)



Bulat 2 (10 Data)



Bulat 3 (10 Data)



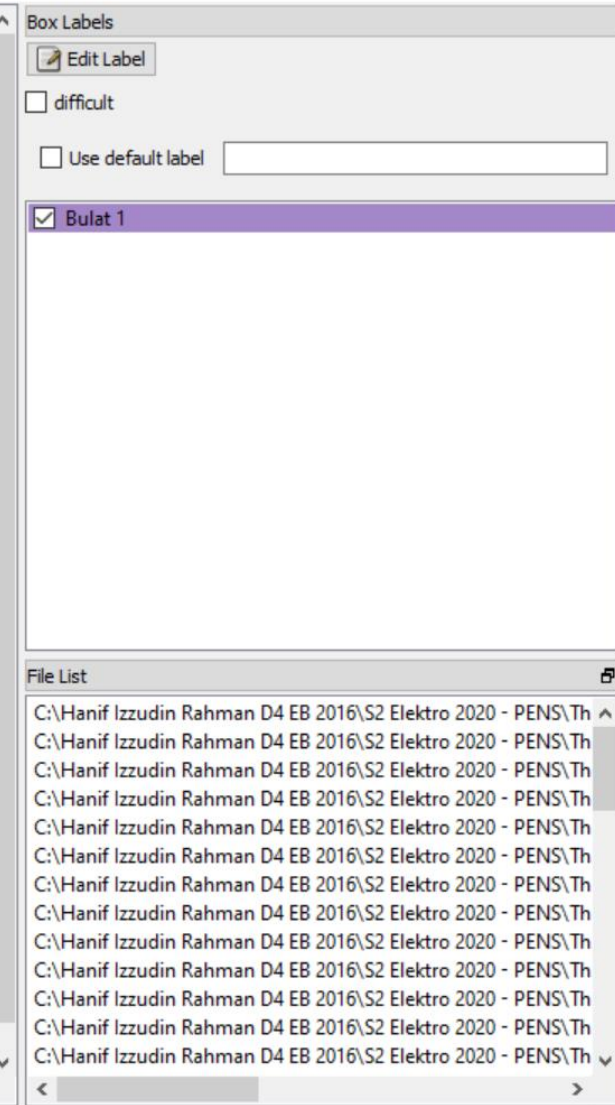
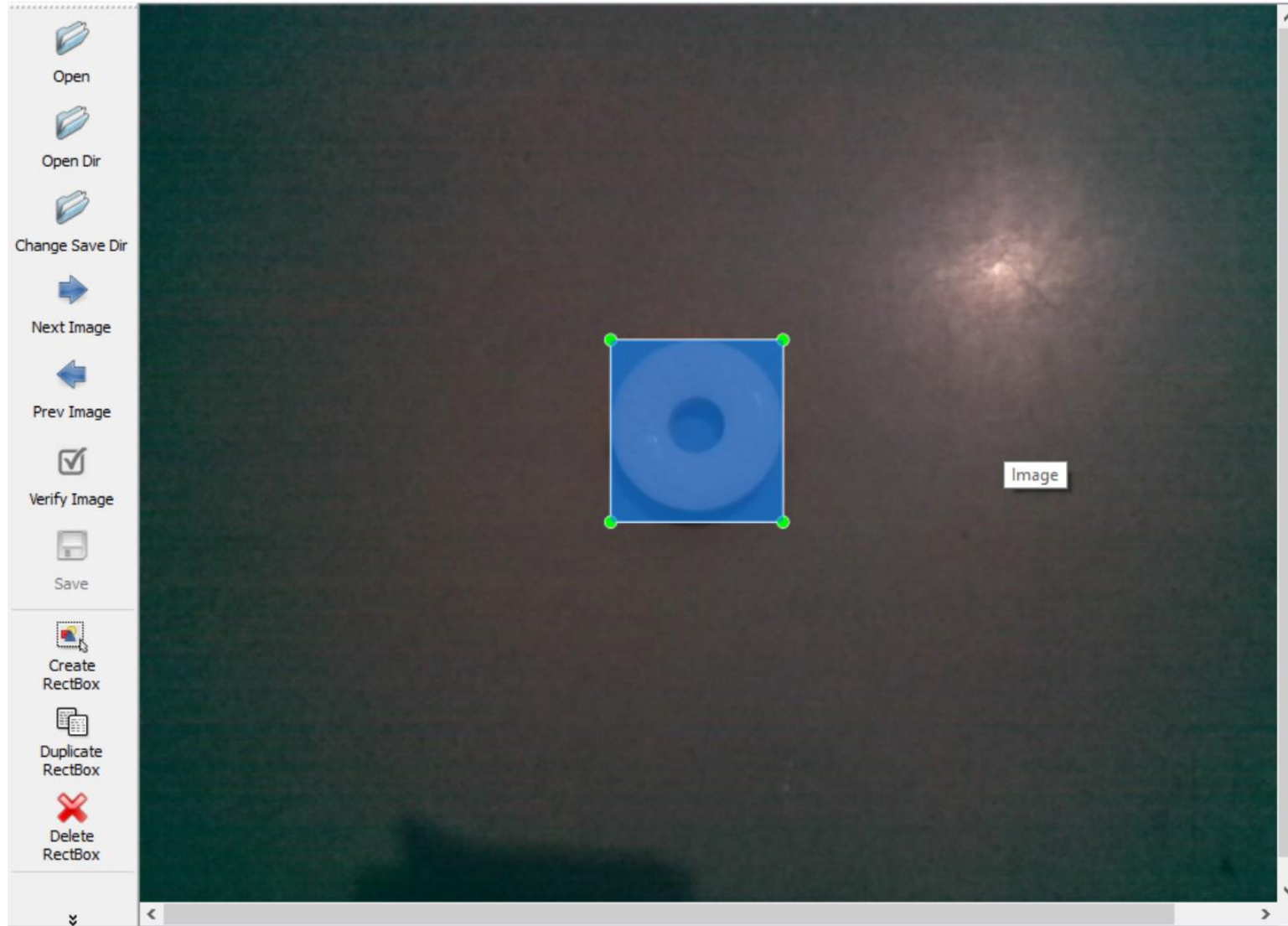
Bulat 4 (10 Data)



2. Annotation

labellmg C:\Hanif Izzudin Rahman D4 EB 2016\S2 Elektro 2020 - PENS\Thesis\Raspberry Pi 3_S2 Kuliah_Advanced Embedded System\Final_file\images\train\1.jpg

File Edit View Help



3. Training (Google Colab)



“Menggunakan SSD terlatih dengan MobileNetV2 pada MSCOCO Dataset”

Object Detection

Feature Extraction

Classification

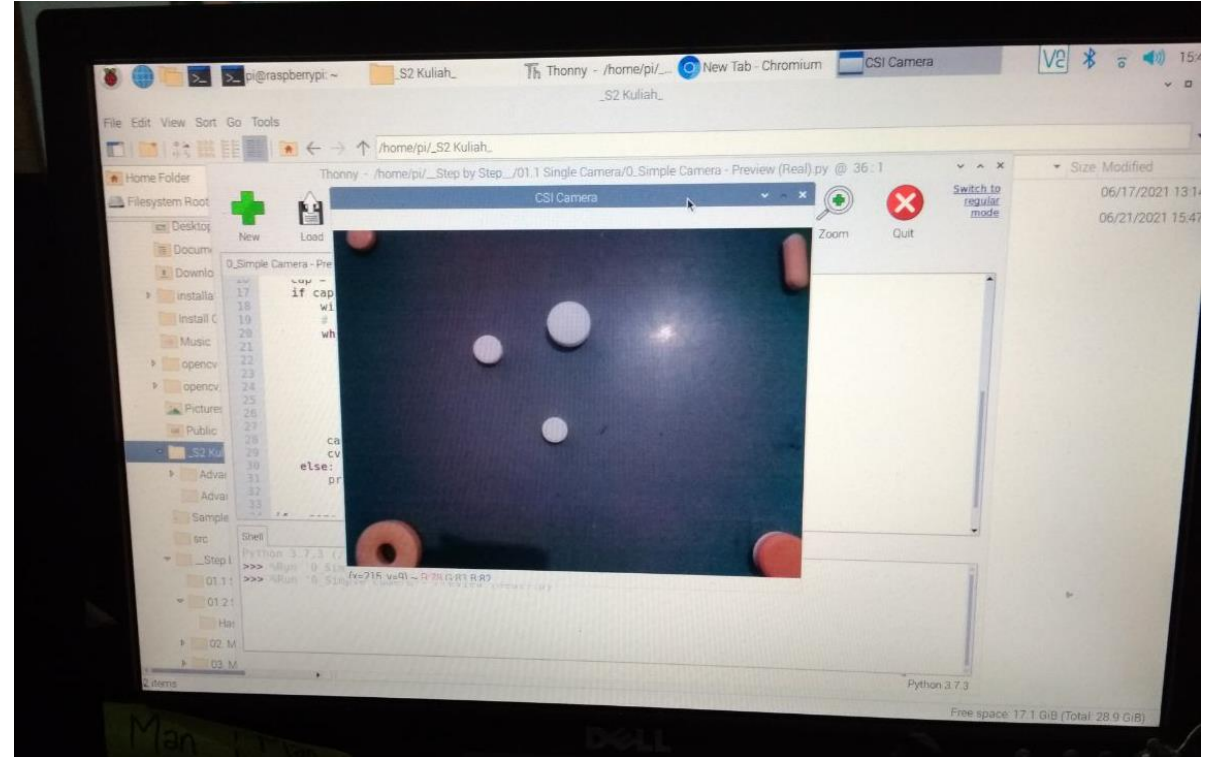
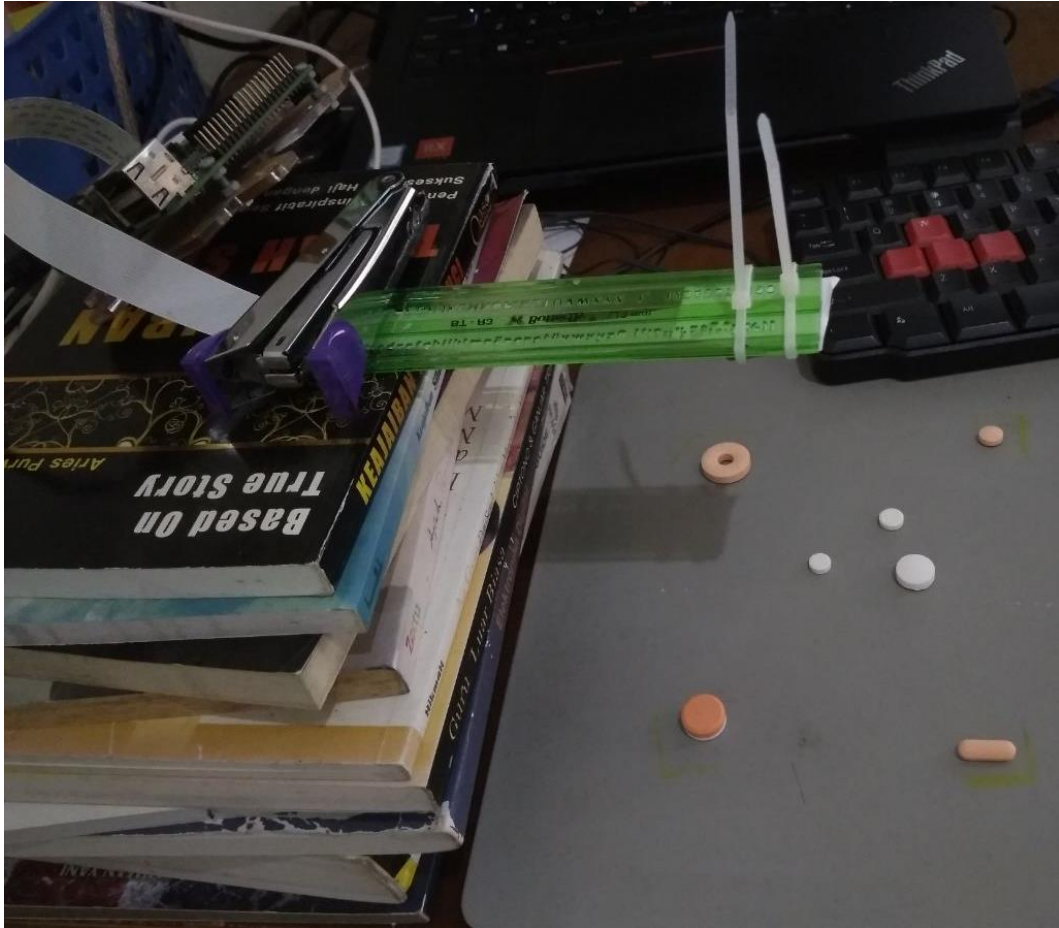
Single-Shot Detector (SSD)

MobileNet V2

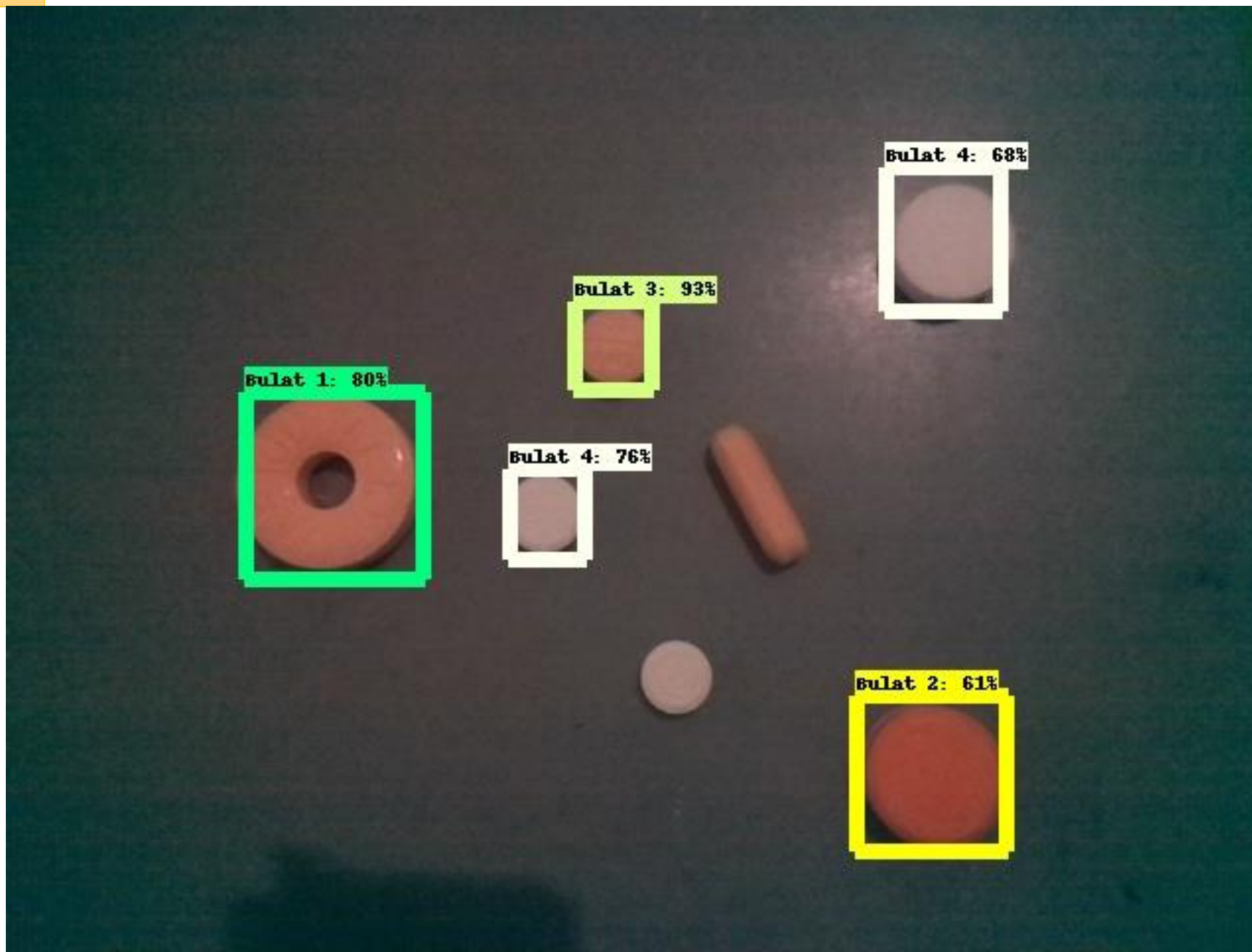
5 Classes:

- Bulat 1
- Bulat 2
- Bulat 3
- Bulat 4
- Lonjong 1

4. Embed AI in Raspberry Pi 3 Model B V1.2



RESULT



RESULT



RESULT (Video)

0.00

Bulat 2: 93%



Bulat 4: 98%



Bulat 4: 99%



Bulat 3: 94%



Bulat 3: 95%



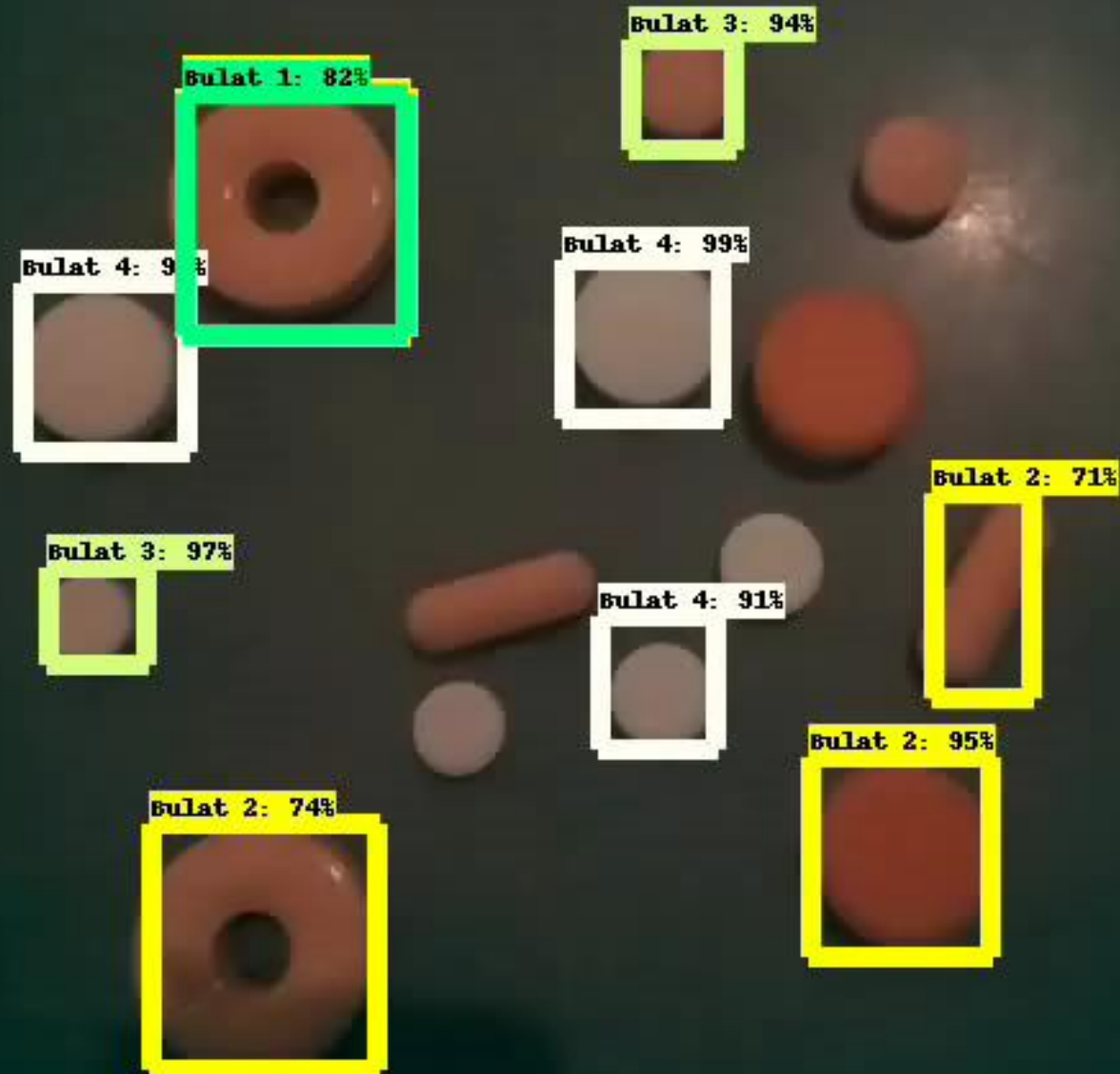
Bulat 1: 99%



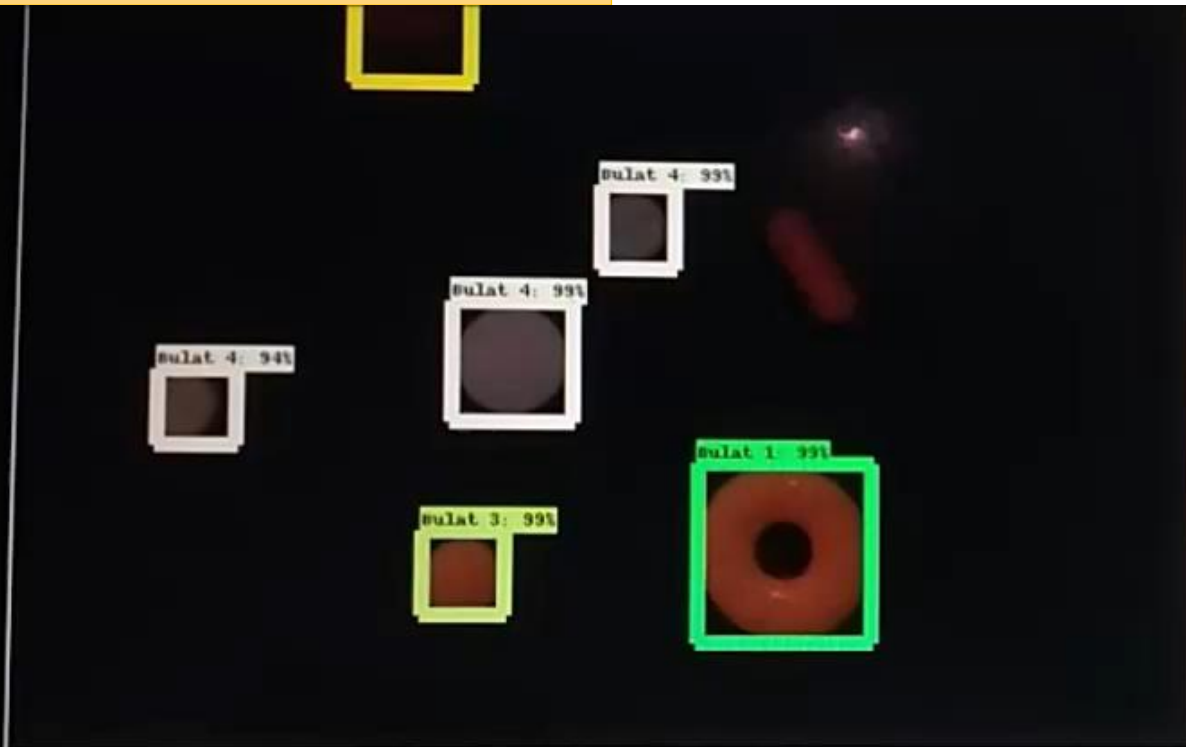
RESULT (Video) - Double



0.00



Real FPS Video



```
detections:0')
```

```
'i'
```

```
(80))
```

```
ape: [1, None, None, 3]  
column has the pixel RGB value
```

```
93 frame_expanded = np.expand_dims(frame_rgb, axis=0)  
94  
95 # Perform the actual detection by running the model with the image as input  
96 (boxes, scores, classes, num) = sess.run()
```

Shell

```
util.py:138: The name tf.gfile.GFile is deprecated. Please use tf.io.gfile.GFile instead.
```

```
WARNING:tensorflow:From /home/pi/_S2 Kuliah_/Advanced Embedded System/_Final_/models-original/research/object_detection  
.py:49: The name tf.GraphDef is deprecated. Please use tf.compat.v1.GraphDef instead.
```

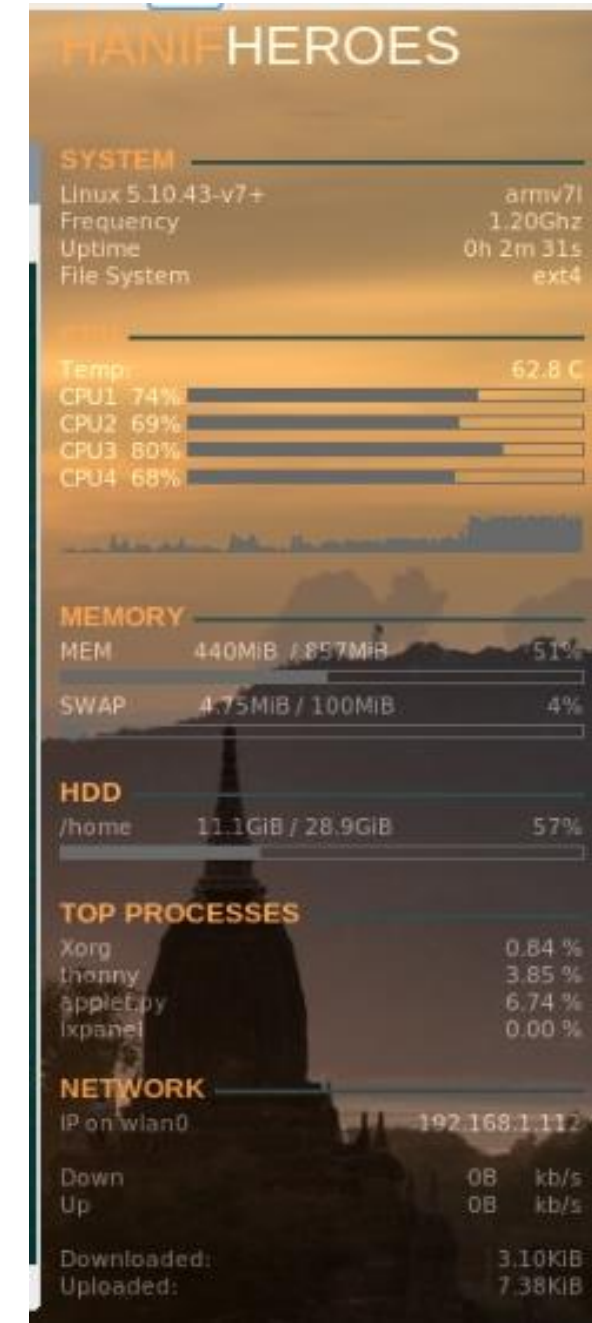
```
WARNING:tensorflow:From /home/pi/_S2 Kuliah_/Advanced Embedded System/_Final_/models-original/research/object_detection  
.py:55: The name tf.Session is deprecated. Please use tf.compat.v1.Session instead.
```

Summary

➔ Object yang dideteksi tidak akurat, terutama untuk object “Lonjong 1”. Ini dikarenakan dataset yang di-train hanya sedikit (15 Data)

Raspberry Pi 3 Model B V1.2

- ➔ Distance : 8 cm
- ➔ Angle : 0 Degree
- ➔ FPS : 1.2
- ➔ Memory Usage : 440 Mb
- ➔ CPU Load : 72.5 %
- ➔ Temperature : 62.8



Reference



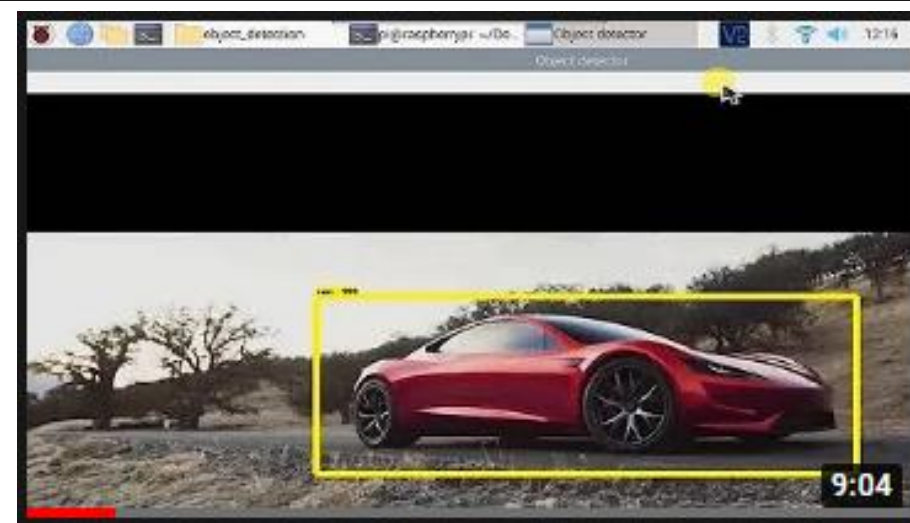
Raspberry pi custom object detection using tensorflow lite 🔥 | no GPU| PART - 1 🔥

7.7K views • 1 year ago



Unlocked lab

Note: use python 3.6 and tensorflow 1.15.0 name.py – <https://github.com/unlockedlabyoutube/annotation.git> Labelling zip ...



<https://www.youtube.com/watch?v=J-rocbCaGFQ>

Thank You!



<https://github.com/hanifizzudinrahman/Tablet-Recognition-using-Deep-Learning>