

INTRODUCTION

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OVER ALL APPROACH

Find the vehicles number plate in the given data and makes the bounding box with their label and read the text in number plate using OCR(optical character recognition)

Packages used:

- Detecto
- Easyocr
- Pytorch
- Matplotlib

Get the samples of number plate images in internet and make the bounding box using the makesense.ai site and save it in .xml file,the xml file contains image width and image height.

Then trained it on pre-trained **Faster R-CNN ResNet-50 FPN** using detecto package(detecto is built top on **PyTorch**). I use the google colab GPU for train the model,once the training process finished then upload the new data and predict it and crop it .

The cropped images is ready to identify the character ,with the help of OCR identify the characters in the image



SEGMENTATION METHOD USED

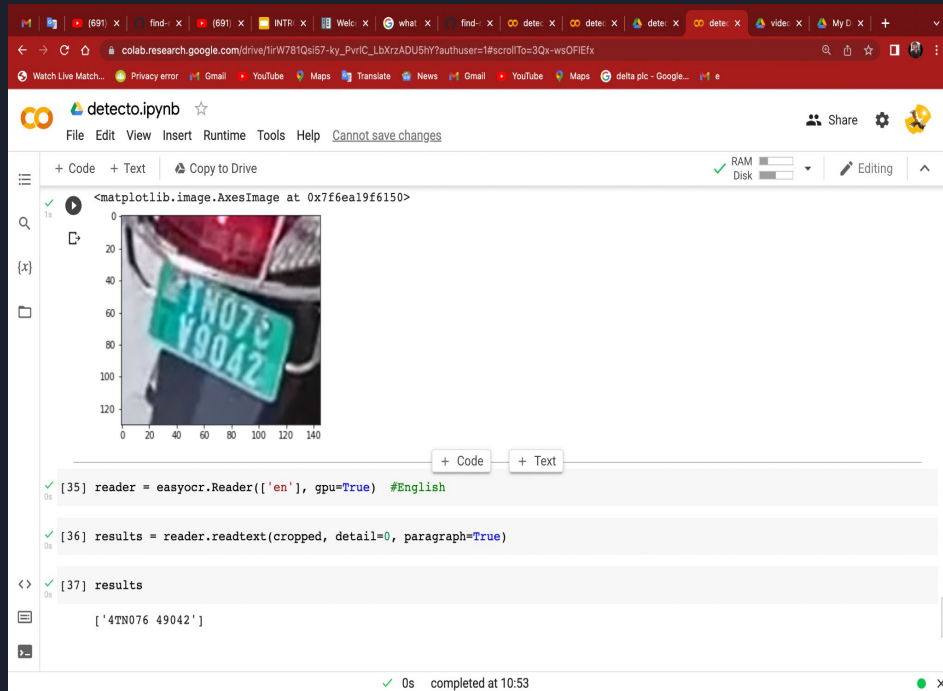
- Here i use the pre-trained **Faster R-CNN ResNet-50 FPN** using detecto,in this we performs a combination of convolution layers and max pooling method with specific kernel size and lastly we connect with fully connected Layer.
- when using these **Faster R-CNN ResNet-50 FPN** architecture we extract and capture more details from the images



OCR METHOD USED

- In this i used the OCR with “en” parameter means that identify the english characters and numbers only and other parameters like “hi”, ”tel” are available to detect hindi,telugu languages and i trained it on GPU so i give the parameter (gpu=**True**)
- Then i read the character using `reader.readtext` method and set details to 0 for simple text output
- `Paragraph=True` will combine all results making it easy to capture it in a dataframe and print the result

OUTPUTS SCREENSHOTS




colab.research.google.com/drive/firW781Qsi57-ky_PvriC_LbXrzADU5hY?authuser=1&scrollTo=3Qx-wsOFIEfx

detecto.ipynb

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<matplotlib.image.AxesImage at 0x7f6ea19f6150>



[35] reader = easyocr.Reader(['en'], gpu=True) #English

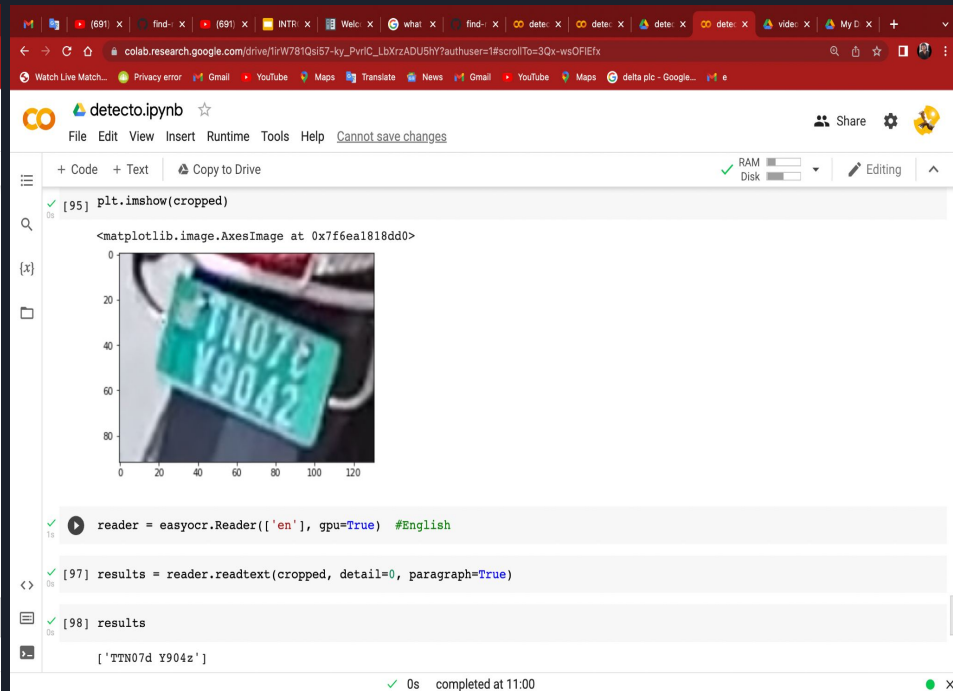
[36] results = reader.readtext(cropped, detail=0, paragraph=True)

[37] results

```
['4TN076 49042']
```

0s completed at 10:53

SCREENSHOT 1




colab.research.google.com/drive/firW781Qsi57-ky_PvriC_LbXrzADU5hY?authuser=1&scrollTo=3Qx-wsOFIEfx

detecto.ipynb

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[95] plt.imshow(cropped)



<matplotlib.image.AxesImage at 0x7f6ea1818dd0>

reader = easyocr.Reader(['en'], gpu=True) #English

[97] results = reader.readtext(cropped, detail=0, paragraph=True)

[98] results

```
['TTN07d Y904z']
```

0s completed at 11:00

SCREENSHOT 2



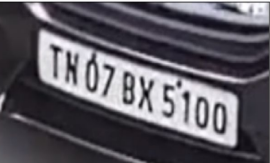
detecto.ipynb

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```
plt.imshow(cropped)
```

<matplotlib.image.AxesImage at 0x7f4a89041dd0>



+ Code + Text

```
[263] reader = easyocr.Reader(['en'], gpu=True) #English
[264] results = reader.readtext(cropped, detail=0, paragraph=True)
[265] results
```

['IhoZC BX 51001']

0s completed at 10:13

SCREENSHOT 3


detecto.ipynb

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```
plt.imshow(cropped)
```

<matplotlib.image.AxesImage at 0x7f4bc8167d10>



[287] reader = easyocr.Reader(['en'], gpu=True) #English
[288] results = reader.readtext(cropped, detail=0, paragraph=True)
[289] results

['Ikoz BX5100']

0s completed at 10:16

SCREENSHOT 4



colab.research.google.com/drive/1irW781Qsi57-ky_PvriC_LbXrzADUSHY?authuser=1#scrollTo=3Qx-wsOFIEfx

detecto.ipynb

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RAM Disk

Editing

```
plt.imshow(cropped)
```

<matplotlib.image.AxesImage at 0x7f6eal8e3390>



```
[47] reader = easyocr.Reader(['en'], gpu=True) #English
```

```
[48] results = reader.readtext(cropped, detail=0, paragraph=True)
```

```
[49] results
```

```
['TN07d 904z _']
```

0s completed at 10:55

SCREENSHOT 5

colab.research.google.com/drive/1irW781Qsi57-ky_PvriC_LbXrzADUSHY?authuser=1#scrollTo=3Qx-wsOFIEfx

detecto.ipynb

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RAM Disk

Editing

```
[273] cropped=image[boxes[0][1]:boxes[0][3],boxes[0][0]:boxes[0][2]]
```

```
plt.imshow(cropped)
```

<matplotlib.image.AxesImage at 0x7f4a89203c90>



```
[275] reader = easyocr.Reader(['en'], gpu=True) #English
```

```
[276] results = reader.readtext(cropped, detail=0, paragraph=True)
```

```
[277] results
```

```
['Ik07 BX = 5100']
```

0s completed at 10:15

SCREENSHOT 6



THANK YOU

- JEYARAMAN K