Curso: Redes Neuronales y Aprendizaje Profundo

Tarea: Reconocimiento de placas peruana con YOLO

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La tarea se desarrolló en Google Colab.

1. **Instalación de librerías**
    a. **Se inataló ultralytics**

```
!pip install ultralytics
```

    b. **Se instaló a librería pytesseract, para reconocimiento del texto en imágenes (OCR)**

```
!sudo apt install tesseract-ocr
!pip install pytesseract
```

2. **Dataset**
    a. **Se descargo desde roboflow.**
3. **Entrenamiento.**
    a. **Se entrenó YOLOv10, con 100 épocas**

```
      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Size
    100/100      11.6G      2.195      1.565      1.746        127        640: 100%|██████████| 23/23 [00:15<00:00,  1.53it/s]
                 Class     Images  Instances      Box(P          R      mAP50  mAP50-95): 100%|██████████| 2/2 [00:00<00:00,  2.98it/s]

100 epochs completed in 0.567 hours.
Optimizer stripped from runs/detect/train8/weights/last.pt, 5.7MB
Optimizer stripped from runs/detect/train8/weights/best.pt, 5.7MB
```

    b. **Exportamos el mejor modelo.**

```
ONNX: starting export with onnx 1.17.0 opset 19...
ONNX: slimming with onnxslim 0.1.34...
ONNX: export success ✅ 17.0s, saved as 'runs/detect/train8/weights/best.onnx' (8.9 MB)

Export complete (18.7s)
Results saved to /content/drive/MyDrive/peru_plates_recognition/runs/detect/train8/weights
Predict:         yolo predict task=detect model=runs/detect/train8/weights/best.onnx imgsz=640
Validate:        yolo val task=detect model=runs/detect/train8/weights/best.onnx imgsz=640 data=/content/drive/MyDrive/peru_plates_recognition/dataset/data.yaml
Visualize:       https://netron.app
'runs/detect/train8/weights/best.onnx'
```

4. Reconocimiento de placas

a. Leemos el modelo almacenado y hacemos la predicción

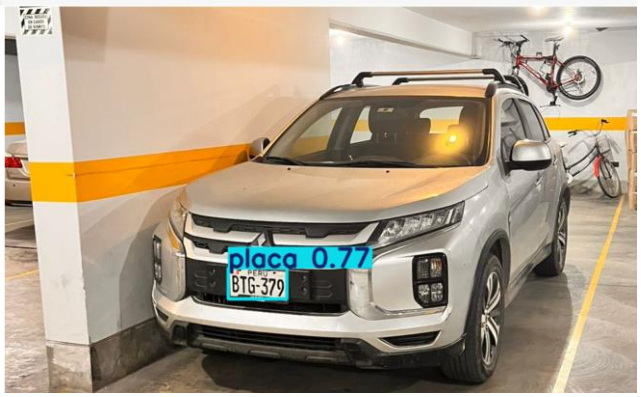
```
# Load the trained YOLO model
model = YOLO('/content/drive/MyDrive/peru_plates_recognition/runs/detect/train8/weights/best.pt')

# Predict the license plate in the image
results = model.predict(source=image_src, imgsz=640)
```

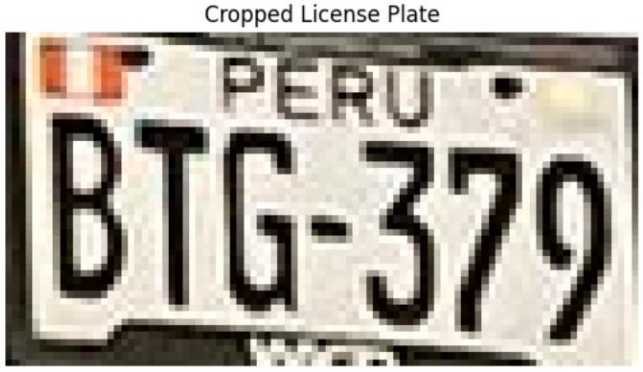
```
image 1/1 /content/drive/MyDrive/peru_plates_recognition/car.jpeg: 640x480 1 placa, 13.7ms
Speed: 2.9ms preprocess, 13.7ms inference, 0.6ms postprocess per image at shape (1, 3, 640, 480)
```

b. Se muestra la detección de la placa

```
# Visualize the results
for result in results:
    result.show()
```



c. Finalmente se obtiene la placa del vehículo.




```
Detected License Plate Number: BTG-379
```