Vehicle and License Plate Detection and Recognition Pipeline

Installation Instructions

To begin using the Vehicle and License Plate Detection and Recognition Pipeline, first install the required library by running the following command:

```
!pip install ultralytics
```

After the installation, you can proceed with loading the models and processing images or videos.

Pipeline Overview

This pipeline works for both image and video inputs, utilizing three models: a vehicle detection model, a license plate (LP) detection model, and a license plate character recognition model. The workflow is as follows:

1. **Load the Vehicle Detection Model (YOLOv8)**:
    - The YOLOv8 model is loaded and used to detect various types of vehicles (e.g., cars, buses, trucks) in the input (either image or video frames).
    - The model identifies vehicles and provides bounding boxes for each detected vehicle.

```
from ultralytics import YOLO

vehicle_model = YOLO("vehicle_detection.pt")
```

2. **Crop Detected Vehicles and Pass to License Plate (LP) Detection Model**:
    - For each detected vehicle, the bounding box is used to crop the image or frame to focus on the vehicle.
    - The cropped vehicle image is passed to the YOLOv8-based license plate detection model, which detects and extracts the region of the license plate within the vehicle image.

```
LP_detection_model=YOLO("LP_detection.pt")
```

3. **Pass Cropped License Plates to the License Plate Recognition Model**:
    - The cropped license plate area is processed using a license plate recognition model.
    - This model applies YOLOv8 to detect characters and their labels is the recognized text of license plate .
    - Arrange the text from top and bottom moving left to right.

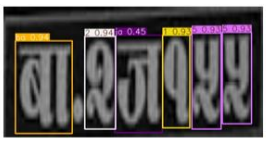
```
recognise_model=YOLO("recognise.pt")
```

Predicted Image

Detections:

3 taxi(s) detected.

taxi

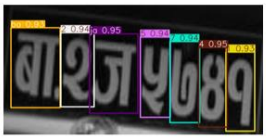


Recognised License Plate

Recognized Text:

ba 2 ja 1 5 5

taxi



Recognised License Plate

Recognized Text:

ba 2 ja 5 7 4 1