**AUTOMATIC LICENSE PLATE REGONITION (ALPR) SYSTEM BASED ON THE YOLO 5 (YOU ONLY LOOK ONCE) DETECTOR**

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**Description of Project**

This Python project on "An efficient and layout-independent Automatic License Plate Recognition (ALPR) System based on the YOLO 5 (YOU ONLY LOOK ONCE) Detector" involves development of an end-to-end system that can detect and recognize license plates with high accuracy and efficiency. The project integrates various computer vision, supervised learning and deep learning techniques for license plate detection, character segmentation, and character recognition. The YOLO 5 detector has been utilized to detect license plates, providing accurate and efficient results across different layouts. Advanced character segmentation techniques have been employed to isolate individual characters from the detected license plates. The first component of our system is license plate detection, where the YOLO 5 detector is employed to accurately locate license plates in images. The YOLO 5 detector offers high efficiency and accuracy, enabling real-time processing and robust detection regardless of the layout variations. The second component focuses on character segmentation, which aims to separate individual characters within the detected license plates. We propose a robust method that effectively handles overlapping characters, occlusions, and variations in character size and spacing. Finally, character recognition is performed to interpret the segmented characters. Our system utilizes supervised learning, deep learning techniques and optical character recognition (OCR) algorithms to accurately recognize the characters on the license plates. This enables the extraction of meaningful information, such as alphanumeric sequences or specific patterns. The combination of the YOLO 5 detector, robust character segmentation, and accurate character recognition contribute to the development of an adaptable automatic license plate recognition system. Our system addresses the challenges posed by the variability in license plate layouts, including differences in size, shape, colour, font, and placement across different regions and countries. Experimental evaluations demonstrate the effectiveness and efficiency of our proposed system. The final product is an efficient and layout independent automatic license plate recognition system that can be used in a wide range of applications, including law enforcement, parking management, and traffic monitoring. Overall, our proposed system offers a practical solution for efficient and layout-independent license plate recognition, providing valuable support to various domains requiring accurate and automated identification of license plates.

**Steps to Run the code**

1.Use the command “$ pip install -r requirements.txt”

to install the packages according to the configuration file requirements.txt

2.In the code folder open the “final\_output.py” file and run the file. In the path you can add the file path of the image you want to find the License Plate of.

3. The link of the data set is also provided in that file. We have linked the dataset to our google drive .

4. A webpage is also available. You can alternatively also run app.py in the webapp folder to see the website.

**Required Libraries**

**Libraries Version**

easyocr 1.6.2

matplotlib 3.5.2

numpy 1.21.5

numpy 1.23.5

opencv\_python 4.7.0.72

pandas 1.4.4

pytesseract 0.3.10

scipy 1.9.1

tensorflow 2.12.0

tensorflow\_intel 2.12.0

~pencv\_python\_headless 4.5.4.60

The libraries information is given in the requriements.txt file.

**Link to our dataset**

**YOLO onnx model:** <https://drive.google.com/file/d/1tIGKrHYwKB8vnbBwtIES_J-EZNHEVKBF/view?usp=sharing>

**Dataset and model:**

<https://drive.google.com/drive/folders/1rW-219lBScOclvgbiIsSh2ANQm-_fFhb?usp=sharing>