A Automatic License Plate Recognition Based on the YOLO Detector

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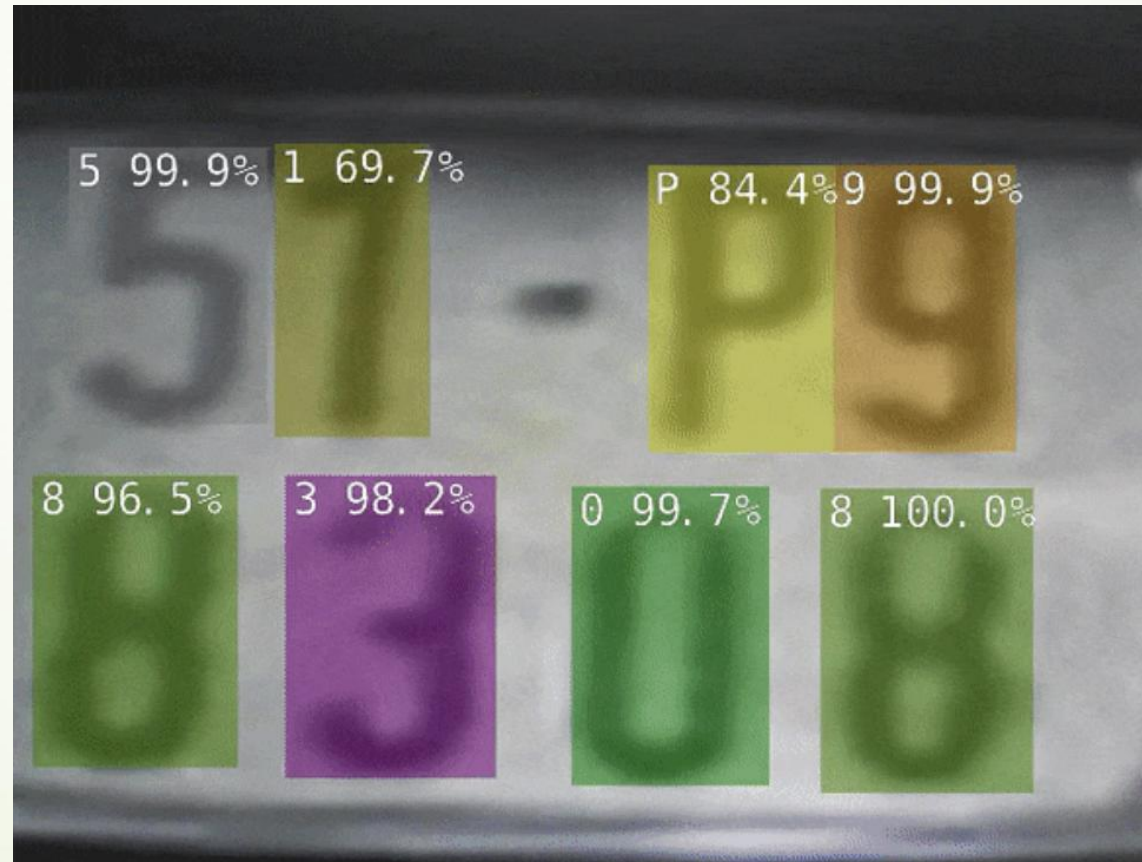
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1. <u>INTRODUCTION</u>

Automatic License Plate Recognition (ALPR) has been a frequent topic of research due to many practical applications.

1. <u>INTRODUCTION</u>

- The main contributions of this work can be summarized as follows:

  - A new real-time end-to-end ALPR system using the state-of-the-art YOLO object detection CNNs.

  - A robust two-stage approach for character segmentation and recognition mainly due to simple data augmentation tricks for training data such as inverted LPs and flipped characters.

  - A public dataset for ALPR with 8000 fully annotated images (over 60,000 LP characters) focused on usual and different real-world scenarios.

2. THE ALPR DATASET

- The dataset contains 8,000 images taken from parking lots over a variety of times and vehicles.

- Private vehicles have white LPs, while buses, taxis and other transportation vehicles have yellow, blue, red LPs.

License Plate Detection Dataset

New license plate | Business vehicle license plate | Military license plate

Motorcycle license plate | Diplomatic license plate | License plates for state agencies

3. PROPOSED ALPR APPROACH

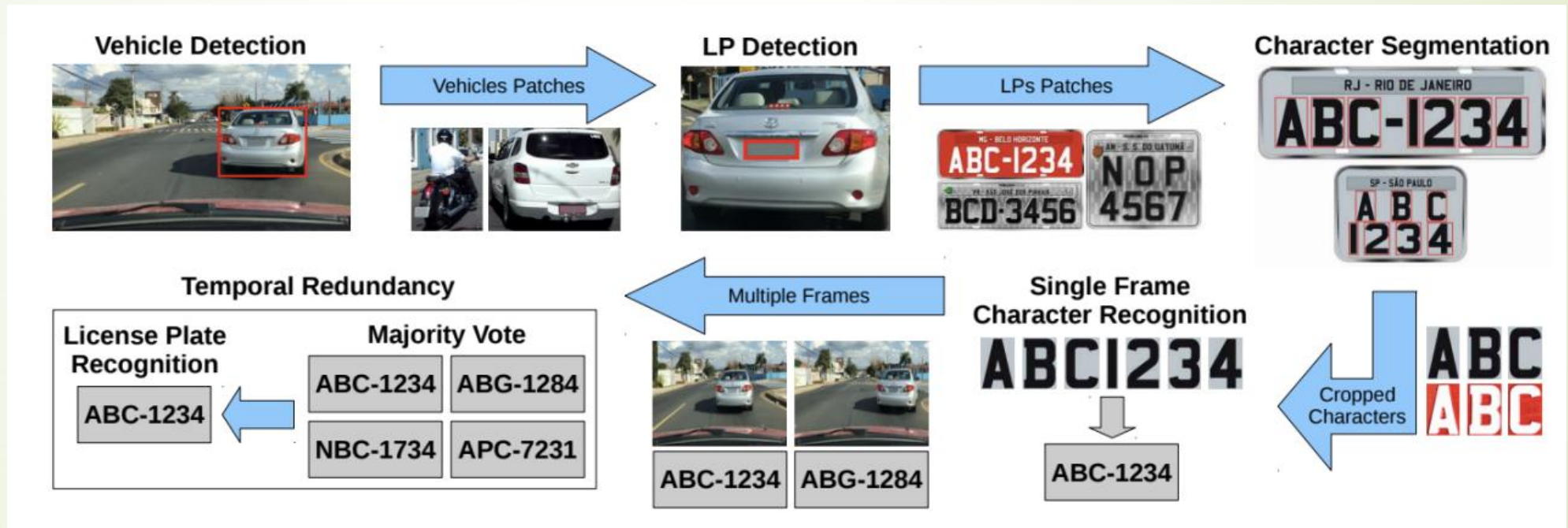- Fig. 2 illustrates the ALPR pipeline, explained throughout this section.

Fig. 2. An usual ALPR pipeline having temporal redundancy at the end.

3. PROPOSED ALPR APPROACH

- Since many characters might not be perfectly segmented, containing missing parts, and as each character is relatively small, even one pixel difference between the ground truth and the prediction might impair the character's recognition.
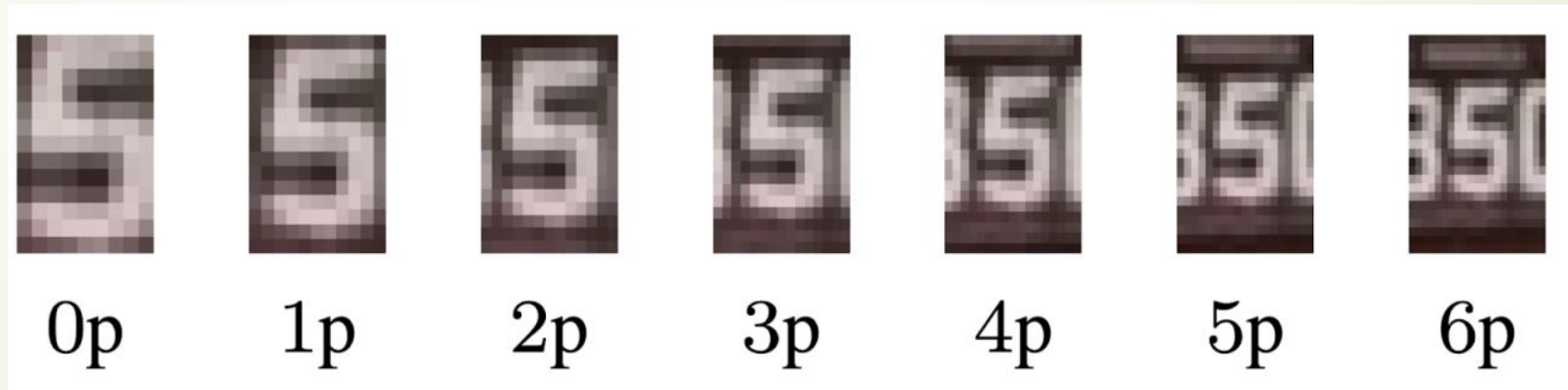

Fig. 3. Comparison of different values of padding.

3. PROPOSED ALPR APPROACH

- Having knowledge of the specific LP country layout (e.g., the Vietnam layout), we know which characters are letters and which are digits by their position.

4. CONCLUSIONS

- A robust real-time end-to-end ALPR system using the state-of-the-art YOLO object detection CNNs.

- The proposed ALPR system is robust to locate vehicle, LPs and alphanumeric characters from any other country.