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BE CSE

Moving Vehicle registration plate detection

Problem statement

Automatic recognition and vehicle license plate recognition are key technologies in most traffic-related applications and are actively researched in the field of video processing. Various methods, techniques and algorithms have been developed for license plate recognition and recognition.

Aim

To detect and recognize the registration plate of a moving vehicle into a text.

Algorithm

1. Start
2. Load the video file
3. Convert video to frames

4. Convert frame to grayscale

5. Apply blur on the image

6. Apply filters to find rectangular boxes

7. Apply text recognition on rectangles to find text in the images.

8. Print the registration number.

9. Stop

Design

*Find all the contours in the image.

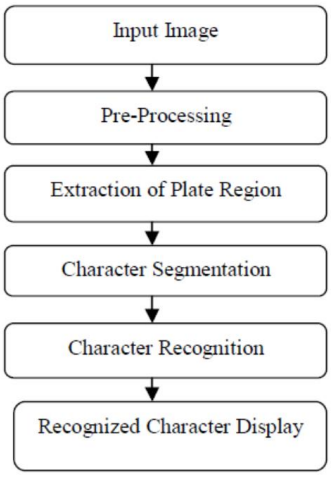
*Find the bounding rectangle of every contour.

*Compare and validate the sides ratio and area of every bounding rectangle with an average license plate.

*Apply image segmentation in the image inside the validated contour to find characters in it.

*Recognize characters using an OCR.

Flow chart



Program code

```
def clean_plate(self, plate):
   gray = cv2.cvtColor(plate, cv2.COLOR_BGR2GRAY)
   thresh =
cv2.adaptiveThreshold(gray,255,cv2.ADAPTIVE_THRESH_GAUSSIAN_
C, cv2.THRESH_BINARY, 11, 2)
, contours, _ = cv2.findContours(thresh.copy(), cv2.RETR_EXTERNAL,
cv2.CHAIN_APPROX_NONE)
if contours:
areas = [cv2.contourArea(c) for c in contours]
        # index of the largest contour in the
        # areas array
        max_index = np.argmax(areas)
        max_cnt = contours[max_index]
        max_cntArea = areas[max_index]
        x, y, w, h = cv2.boundingRect(max_cnt)
        if not self.ratioCheck(max_cntArea, plate.shape[1],
        plate.shape[0]):
                return plate, False, None return plate, True, [x, y, w, h]
else:
        return plate, False, None
def ratioCheck(self, area, width, height):
min = self.min_area
max = self.max_area
ratioMin = 3
```

```
ratioMax = 6
ratio = float(width) / float(height)
if ratio < 1:
    ratio = 1 / ratio
    if (area < min or area > max) or (ratio < ratioMin or ratio > ratioMax):
    return False
return True
```

ScreenShot Of Output

29A33185

Conclusion

Thus, a program to detect licence registration plate on a moving vehicle, using the python code has been successfully detected.

Source Of Reference

Automatic Number Plate Recognition System (ANPR): A Survey by Chirag Indravadanbhai Patel. Image preprocessing techniques in OpenCV documentation.