License Plate Recognition

Python + OpenCV + Tesseract

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Project Objective

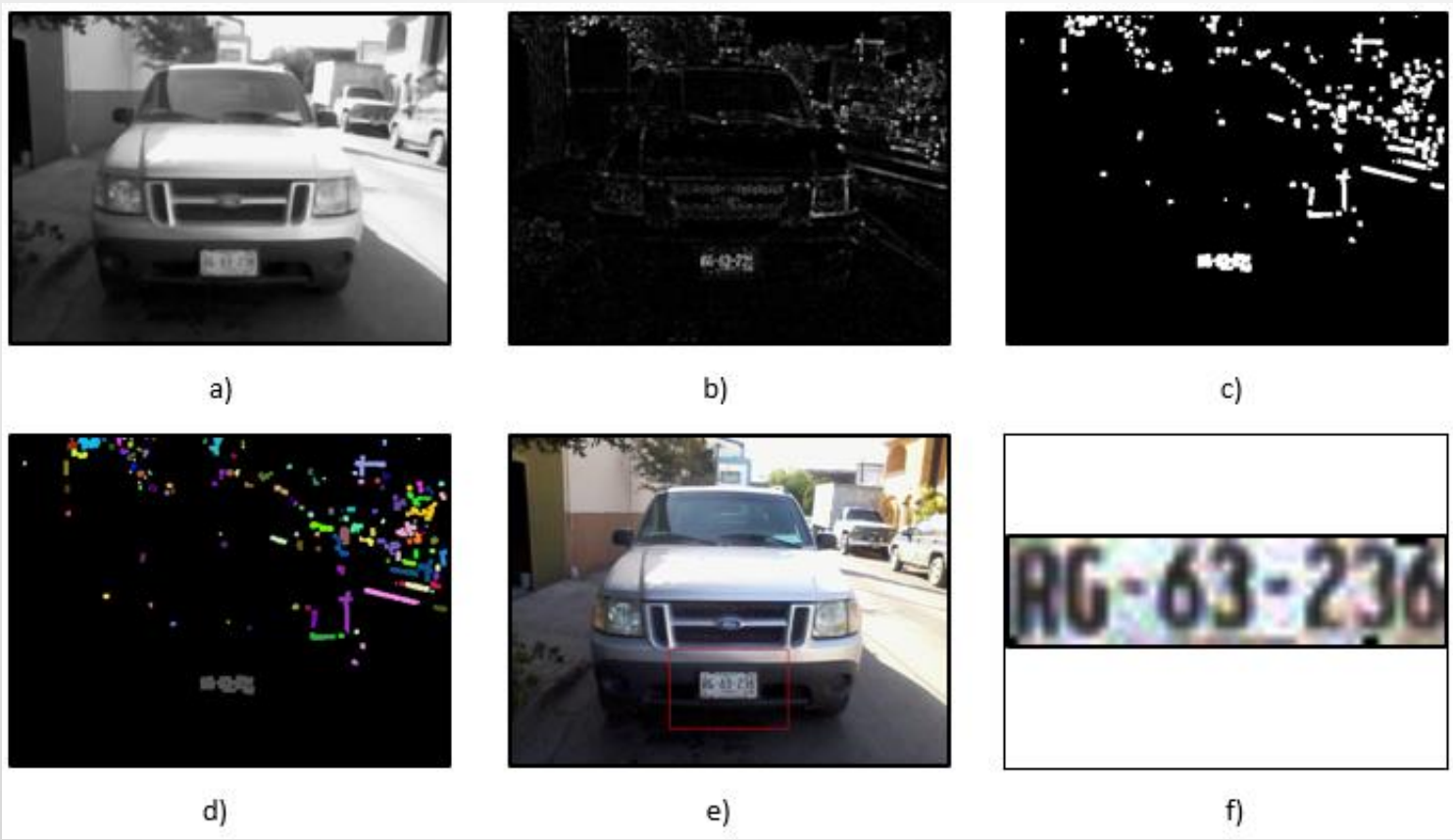
This project aims to ensure the localization of plates in vehicles for further treatment and detection of the number plate of the same.

- Implemented Process
  - Get image
  - Filters and processing
  - Locate Plate Region
  - Form Plate Detection
  - Characters Segmentation
  - Number Plate Recognition

Libreries used

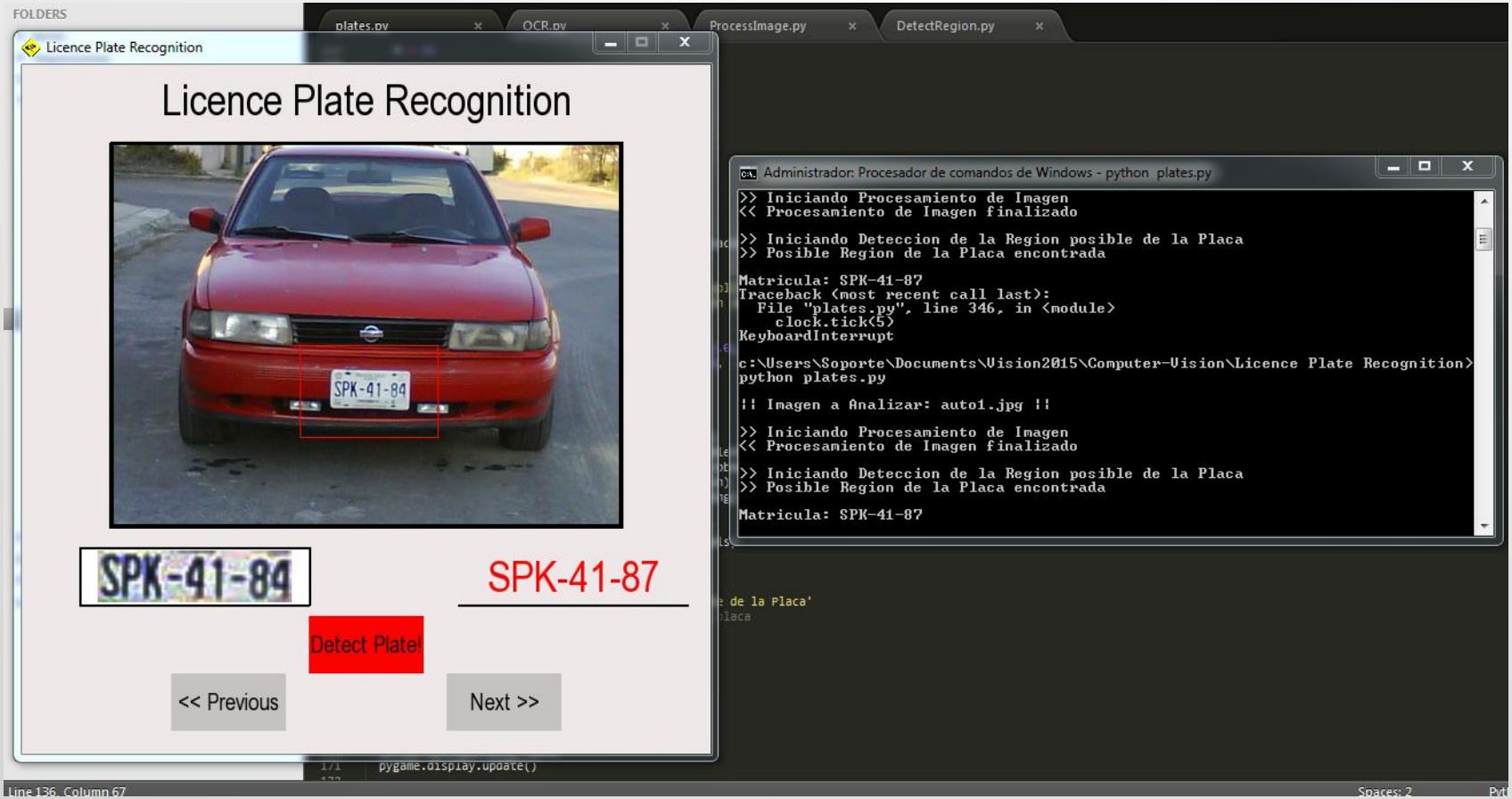
- PIL Module for read images and basic operations.
- OpenCV Module to facilitate processing of the images of plates to recognize
- OCR Tesseract Package for character recognition. One whitelist will be configured to facilitate recognition.

Project Process

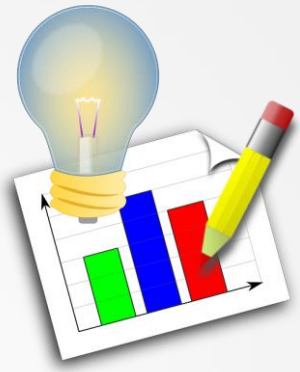


a) Converting the image to grayscale and obtaining your threshold, b) Applying a median filter to remove noise in the input image, c) expansion and binarization of pixels, d) BFS method to find the shape of the plate, e) detecting the region of the plate, f) detecting the text area of the plate.

Implementation



Project Evaluation



There are a number of factors which can cause failure at the time of character recognition by Tesseract, mention some are:

- **Weather conditions**
- **Lighting conditions**
- **Incorrect location of the plate**
- **Speed moving vehicle**
- **Poor quality and / or range of the cameras**
- **Damage and imperfections in the metal plate**

Future Development

- **What am I going to do?**

It will seek better the segmentation of the letters of the plate for better recognition of characters, so the angle correction and different sizes of license plates with greater distance with the camera.

- **What did I achieve?**

I believe that this first version fulfill the purpose of detecting the location and license plate number through basic computer vision techniques

References

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  - http://tesseract-ocr.googlecode.com/svn/trunk/doc/tesseract.1.html
- Histogram Equalization, Fredrik Lundh | May 21, 1997
  - http://effbot.org/zone/pil-histogram-equalization.htm

Questions?

We are ready for demo!