IP'19 Apps Specs

Vehicle plates detection

# Description

## Main Idea

To what extent can a computer recognize Vehicle plate’s governorate? How much information can it extract from the plates? This project aims to detect the vehicle plate’s governorate in a given image and count the number of characters and numbers. In its basic form, the program should be able to extract plate from the image, and then segment this plate into a set of characters and numbers. The text can be slightly rotated.

A more advanced step can be dealing with non-uniformly illuminated images, and be able to extract the required information. Recognizing the segmented plate is also a plus.

|  |  |
| --- | --- |
| **Input** |  |
| **Output** | Number of Character: 6, Numbers=3  Governorate: Cairo  Vehicle: Taxi |

Governorate of vehicle based number count of plate:

|  |  |
| --- | --- |
| Governorate of vehicle | Plate |
| Cairo | Characters=6  Numbers=3 |
| Giza | Characters=6  Numbers=4 |
| Other governorate | Characters=7  Numbers=4 |

Type of vehicle based color of plate:

|  |  |
| --- | --- |
| Type of vehicle | Color of plate |
| Taxi | Orange |
| Government cars | gray |
| Owners cars | light blue |
| Transport | Red |

## Minimum Requirements

1. Extract plate from image to Display separated characters and detect type of vehicle and Governorate.
2. Detect and identify detect type of vehicles and Governorate. (all in one).
   1. Plates are **non-intersecting**.
3. Plates can be slightly rotated

## Possible Add-ons (Bonuses)

1. Extract Plates from non-uniformly images.
2. Detect Plates that suffers from different types of noise.

# Suggested Search Tracks and Keywords

You may use some/all of the following keywords as a guide (not restricted to them):

1. Text segmentation
2. Morphological operations
3. Region properties
4. (+) Text detection
5. (+) Matching and classification

**Test Images for Minimum Requirements**

Case1: Images containing a single Plate.

Case2: Images containing a set of non-intersecting Plates.

Case3: Slightly rotated image of Plates

# Test Images for Bonuses

Case4: Non-uniformly Plate images.

Case5: Noisy images of Plate.

# References

1. Textbook Ch. 9: Morphological Image Processing
2. Textbook Ch.10: Image Segmentation
3. Textbook Ch. 11: Representation and Description
4. (+) Textbook Ch. 12: Object Recognition