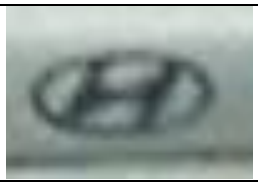
Apps Specs
1- Vehicle Logo Recognition

Description

Main Idea

Vehicle identification and tracking are very important for several potential applications in security, including parking and speed control, and offender trailing. Automatic systems exist to aid law enforcement in the process mainly through license plates. However, sometimes when the plate is missing, covered, or forged, the system may use vehicle manufacturer recognition to classify the vehicle by the *brand logo* on the front or back of the car. In this case, the system takes as input an arbitrary scene (stream or snapshot) and automatically outputs information associated with vehicles in that scene.

Assume that the camera takes a shot of the front or rear side of the vehicle in daylight and good weather conditions, and that the vehicle is the main object in the scene. The algorithm should be able to find the region containing the logo, and produce a sub-image of that region. This is normally fed to a recognition system to identify the brand.

Input		
Output		
	Hyundai	Opel

Minimum Requirements

Identify the car logo from color input images with:

1- Possibly other objects in the background.
2- Frontal/rear view of a vehicle.

Possible Add-ons (Bonuses)

1- Identify the car logo from color input images with:
    a. Complex scenes (e.g. many vehicles).
    b. Varying illumination conditions and noise.
    c. Arbitrary perspectives (i.e. different camera angles).

Suggested Search Tracks and Keywords

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

1- Segmentation
2- Morphological operations
3- Region properties
4- Representation, feature extraction, matching, and classification

Test Images for Minimum Requirements

Case1: Frontal/rear scene of a vehicle with no other objects.

Case2: Frontal/rear scene of vehicle with other objects (e.g. blocks, signs, other vehicle(s) – partially appear).

Test Images for Bonuses

Case3: Simple scene of a vehicle from arbitrary perspectives.

Case4: Scene of heavy traffic.

Case5: Non-uniformly illuminated versions of cases 1-4.

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