Scene Segmentation and Interpretation

Pascal Project

Introduction

In this coursework the main goal is to recognize objects from a number of visual object classes in realistic scenes. We follow the same philosophy of the well known Pascal Challenge 2006 (http://www.pascal-network.org/challenges/VOC/voc2006/index.html) in which ten object classes have to be recognized:

- bicycle, bus, car, motorbike
- cat, cow, dog, horse, sheep
- person

This is an open project in which you can choose the strategy to solve the problem, the descriptors, the classifiers, etc. Note that one classifier (binary decision) is build for each specific class.

Matlab guidelines:

- Sift library to automatically compute sift descriptors from an image
- PRtools4 - Matlab toolbox for Pattern Recognition. You will find lots of functions for the classification task (NN, K-NN, LDC, SVM, etc)
- Follow the development Kit we provide. It simplifies the work since all the file access, image sets (train, val, test), output results is already done.

Objectives

A) Information search.

B) To understand the problem. To design, analyse and implement the strategy to follow (descriptors, classifier)

C) To test the classification with the provided images sets. To study the problems and possible improvements.

D) Documentation of all the steps and oral presentation at the end of the coursework.

Coursework

A) Coursework documentation with the following sections:
1) Introduction and problem definition.
2) Strategy analysis.
3) Design and implementation of the proposed solution.
4) Experimental section and results analysis (speed, ROCs, Az values, etc).
5) Organization and development of the coursework (tasks, time estimations and real dedication).
6) Conclusions.

B) Matlab code with comments.

C) Oral presentation.

Coursework Evaluation:

A) During the labs.

B) After the coursework.