

**PROJECT NO. 1**  
**Traffic sign detection**

**Summary**

Automatic recognition of traffic signs is important for driver assistance systems, automated driving and inventory purposes. The recognition process is usually composed of two main steps: detection of sign candidate regions and identification of signs. The main objective of this project is to develop a program for the automatic detection of speed limit signs (fig.1), in street-level images (fig.2).



Fig.1 – Example of speed limit sign



Fig. 2 – Road images

**General aims**

To apply the theoretical knowledge about Image Processing and Analysis acquired in the Computer Vision course, namely, segmentation techniques, based on color and shape information, using OpenCV library as development tool.

**Specific aims**

The program must allow:

- the acquisition of a road image, using a computer connected camera, or the selection of a pre-acquired image;
- the detection of the signs of the specified type, signaling their position on the image;

Assumptions: in order to simplify the problem, you may assume that

- there is no sign superposition;
- the optical axis of the camera is almost perpendicular to the sign plane.

Optional feature:

- determine the value of the speed limit from the image.

The work must be done by groups of 3 students.

**Project report and delivery**

A short report (max. 3 pages) must be delivered, including:

- any additional specifications (if needed);
- the description of the proposed algorithm;
- relevant comments about the efficacy of the used methods, describing the main problems that were encountered and any proposed solutions;
- the status of the proposed solution and the degree of fulfillment of the aims.

The code, with significant comments, must be presented in annex.

The work must be submitted at the Computer Vision page, in the UP Moodle site, until the end of the day 2013/Oct/28th.

**Bibliography and other support material**

- Portuguese traffic signs law:  
<http://www.dre.pt/pdf1s/1998/10/227B01/00020119.pdf>
- IEEE Explore Digital Library (search for: traffic road sign segmentation):  
<http://ieeexplore.ieee.org/Xplore/home.jsp>