Camera Calibration
IMA208
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The aim of these practical works is to get you familiar with several applications in which camera calibrating is involved:

1. **Panorama**: Consists in stitching several images in order to generate a larger field of view
2. **Perspective correction**: Generate a front parallel image where there is no more perspective. This can be applicated to scans of document or to building pictures.
3. **Height measurement with a single view**: Can be done thanks to the invariance of the bi-ratio

For most application, a python script is provided to you, as well as some images. For your report, you are asked to illustrate your results with your own pictures FOR AT LEAST on task.

Questions for each Python scripts:

QUESTIONS 1 on Panorama.py:

- Which geometrical transformation is pre-implemented? Is it appropriate for stiching? Why?
- Try some other king of features rather than HOG. Choose among SIRF, SURF, HAZE, GLOH,…
- What is the effect of a modification of the distance threshold?

QUESTIONS 2 on Corners.py

- The purpose of this script is to detect corner in the image, which is useful for many applications that need the matching of points.
- What is the purpose of the Gaussian blur?
- What other filtering could have been more appropriate?
- Give a short description of the main elements and analyse the effects of the different parameters (Canny, Hough,…)

QUESTIONS 3 on redressA4.py

- Apply this script to the image of a building
- Test the robustness by adding some outliers
- Replace the manually selected points with the output of **corners.py**. Comment