Title: Visual descriptors for image understanding: basic concepts and applications

Instructor: Prof. Antonio Fernández (Universidade de Vigo, Spain)

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Duration: 20h, 5 days (4h/day)

Timeline (tentative): May/June 2022

ABSTRACT

Texture, colour and shape are the visual stimuli that mostly determine the appearance of objects, materials and scenes. Consequently, the automatic characterisation of these stimuli via suitable descriptors plays a fundamental role in a number of applications, as for instance product inspection, materials classification, remote sensing, medical image analysis and biometric classification.

The overall aim of this course is to introduce the basic concepts behind colour, texture and shape analysis for image understanding. The course consists of:

- Lectures to familiarise with the mathematics and basic concepts of image manipulation and feature extraction (particularly colour, texture and shape);
- Laboratory sessions where the students will develop different projects to put the theory into practice.

OUTLINE OF THE COURSE

1. Image manipulation with Python (3h)
2. Image pre-processing (3h)
3. Filtering (4h)
4. Colour analysis (3h)
5. Texture classification (4h)
6. Shape recognition (3h)