EUROPHOTONICS-POESII MASTER COURSE

PROPOSAL FOR A MASTER THESIS

Dates: April 1st, 2016 – September 30th, 2016

Laboratory : MIND/IN2UB, Departament d'Electrònica, Universitat de Barcelona
City, Country : Barcelona, Spain

Title of the master thesis : Color recognition with digital cameras for quantitative analytics

Name of the tutor of the master thesis : Dr. J. Daniel Prades, Dr. Mauricio Moreno
Email address : dprades@el.ub.edu
Phone number : 93439159
Mail address : Departament d'Electrònica, Universitat de Barcelona
          C/ Martí i Franquès 1, Planta 2, Of.209
          E-08028 Barcelona Spain

Summary of the subject (maximum 1 page) :
Colorimetry is one of the most wide spread techniques for quantitative Analise of chemical and biological substance. Conventional quantification procedures relies on absorbance/transmitance measurements using specialized bulky equipment. This project will explore the feasibility of an alternative, low-cost and ubiquitous method based on the use of digital cameras. The color information acquired by the RGB camera sensor will be processed to determine quantitatively color variations in the samples. This will require full control of the image acquisition stage (illumination, dinamic range, ...), framing and image transformation to recognize the spots to measure, white, black and color balance and finally color quantification and classification (in range values, false positive, cross talk, ...).

Keywords :
Digital camera, image recognition, pattern recognition, instrumentation

Additional information :
* Required skills : programming in Python, Java, knowledge about Android systems.
* Miscellaneous : pre-assinget to Ismael Benito Altamirano