MASTER IN PHOTONICS – "PHOTONICS BCN"
ERASMUS+ "EUROPHOTONICS-POESII"

MASTER THESIS PROPOSAL

Dates: April - September 2018

Laboratory: Center for Sensors, Instruments and Systems development (CD6) – Universitat Politècnica de Catalunya (UPC)
City, Country: Terrassa, Spain.
Title of the master thesis: 3D and multispectral imaging technology to aid in the diagnosis of skin cancer
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Keywords: 3D technology, multispectral imaging science, skin cancer

Summary of the subject (maximum 1 page): A medical platform including 3D and multispectral imaging technology to aid in the diagnosis of skin cancer has recently been developed at the CD6 in the context of an EU project «DIAGNOPTICS : Skin cancer using optics». Clinical measurements of real skin lesions have been carried out at the Hospital Clínic i Provincial de Barcelona with the supervision of expert physicians with this experimental system. 3D topographies and spectral images within the visible range are available for more than 600 lesions including nevi, melanomas and basal cell carcinomas among others.
The student in charge of the project will help in the development of algorithms to process the 3D information of the skin lesions analyzed and combine them with the spectral information from the visible in collaboration with CD6 engineers. The goal is to improve skin cancer diagnosis overcoming some of the limitations that current tools such as dermoscopy have, which consists of the observation of the lesion through a magnifying glass an a polarizer.

Additional information:
* Required skills: MATLAB and laboratoty skills are essential. Self-motivated, objective-driven and capable of autonomous working within a multidisciplinary team is also important.