MASTER IN PHOTONICS – PHOTONICS BCN
EUROPHOTONICS-POESII MASTER COURSE

PROPOSAL FOR A MASTER THESIS

Dates: 2020

Laboratory: Center for Sensors, Instruments and Systems Development (CD6)
Institution: Universitat Politècnica de Catalunya
City, Country: Terrassa

Title of the master thesis: Study on the effects of fogging on accommodation during the refraction process.

Name of the master thesis supervisors:
Meritxell Vilaseca Ricart meritxell.vilaseca@upc.edu
Mikel Aldaba Arévalo mikel.aldaba@upc.edu
Carlos Enrique García Guerra carlos.enrique.garcia@upc.edu

Summary of the subject:

The control of accommodation is one of the main problems during the refraction process; it may increase the power of the eye, and therefore the refraction result can be artificially shifted to myopic. To avoid uncontrolled interactions of accommodation with the refraction, it is desired to have relaxed accommodation during this process. Fogging is a technique to relax the accommodation and is based on adding positive lenses in front of the patient. Positive lenses turn the patient into myopic, which leads to a relaxation of accommodation when distance tests are shown.

Recently a research group from Centre de Desenvolupament de Sensors, Instrumentació i Sistemes (CD6) from the Universitat Politècnica de Catalunya (UPC) has developed a system to monitor the accommodation during the refraction process. The system is based on Hartmann-Shack aberrometry and can be coupled to phoropters.

Your master thesis project will consist of the studying the effect of fogging in the relaxation of the accommodation, using the previously cited experimental system. The

final goal of the study is to propose guidelines for an effective relaxation of accommodation by means of the fogging technique.

The proposed protocol will be tested in laboratory environment at Centre de Desenvolupament de Sensors, Instrumentació i Sistemes (CD6) and in a clinical environment at the Centre Universitari de la Visió (CUV) of the Universitat Politècnica de Catalunya (UPC). You will have the opportunity to participate in this clinical study.

Keywords: accommodation, refraction, fogging, biomedical photonics.

Additional information :

* Required skills: Self-motivated, objective-driven, capable of autonomous working within a multidisciplinary team.