

Scuola di Dottorato in ICT

Doctoral School in ICT

Research project for a PhD curriculum in ICT – Curriculum: **Electronics and Telecommunication**

Tutor: Luigi Rovati

(Possibile) Italian Co-tutor:

(Possibile) Foreign Co-tutor: Prof. R. Ansari

Proposed Title of the research: Optical sensors for the early detection of ocular diseases

Keywords: (3) Optical Sensors, Ophthalmology, Biophotonics

Research objectives: --(max 10 rows)

Development of new biosensors mainly based on optical methods for early diagnosis of ocular pathologies.

The project results will allow improving the quality of the ophthalmic techniques with the aim of gaining new insights in early diagnosis and prophylactics of these diseases.

Proposed research activity --(max 10 rows)

The proposed research has an inter-disciplinary character; in general relates to non-invasive biophysical/biophotonic techniques and specifically to the problem of early detection of ocular pathologies.

Although recently optical methods plays a decisive role in ophthalmology, new types of sensors with improved sensitivity, resolution and measurement speed are eagerly required.

The main biophotonic techniques explored in the project includes:

- *Human iris reflectometry in the visible and near infrared regions.*
- *Ocular fundus near infrared reflectometry.*

Supporting research projects (and Department)

Contratto industriale Medica-DII

Contratto industriale RAND-DII

Sostegno Mobilità NASA- NASA Glenn Research center

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Possible connections with research groups, companies, universities

Ospedale S. Orsola, Bologna

NASA Glenn Research Center