

ICT PHD

Research project for a PhD curriculum in ICT Electronics and Telecommunication

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(*) Italian [Industrial] Co-tutor:

() Foreign Co-tutor:**

Proposed Title of the research: Optoelectronic methods and instrumentation for biomedical smart sensors

Keywords: (5) Optoelectronics, optical measurements, sensors, ophthalmic instrumentation, precision electronics

Research objectives: --(max 10 rows)

The project is devoted to develop new and innovative optoelectronic methods and instrumentation for biomedical smart sensors.

In particular, the research project will be focus on the study of living biological tissues and fluids developing new methods and instrumentation to extract health information. Optical approaches offer the unique advantage to perform measurements without contact avoiding risks for operators and alteration of the samples. Imaging and non-imaging techniques will be considered including AI approach to extract the information of interest.

The development of the project will contribute to improve health management and health care and has a large societal impact in terms of quality of life.

Proposed research activity -- (max 10 rows)

The purpose of the proposed research project is to study and develop new optoelectronics methods and instrumentation for biomedical smart sensors. The broad interdisciplinary program addresses electronics and measurements methods to vision research needs.

The research activities include but are not limited to:

Theoretical and simulative models to design the optics and the electronics of the system

Design and realization of the measuring system

Develop of the system algorithms and software to extract the information of interest

In-vitro tests to determine the performance of the measuring system

In-vivo tests to determine the performance of the measuring system

Supporting research projects (and Department)

Dipartimento di Ingegneria "Enzo Ferrari"

Tecnopolo di Mirandola

Fondazione Velux

Possible connections with research groups, companies, universities.

Tecnopolo di Mirandola

Istituto Clinico Sant'Anna Brescia

Fondazione Bietti