Title: Nanomechanical melanoma screening (NMS)

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Duration: 12 months
Validity period: 12 months since publication on web site
Other info: in collaboration with CNR-IOM

Project AIM

Introduction, brief description of the context

Melanome is a cancer that affect the skin cell and become dangerous when it reaches a depth deeper than 0.8mm. Diagnosis is usually performed by visual inspection and biopsy, which is an invasive surgical practice. Early indication of the malignancy can be obtained by nanomechanical measurements, such as AFM force spectroscopy. With "NMS" the development of self sensing smart will be considered to enable the application of nanospectroscopy directly to interested skin area, without any surgical activity, and leading to a smart microscopy-based biopsy-free cancer diagnosis.

Description of the activities that the student will have to carry out

- literature analysis and context study;
- identification of the opportune sensors-transducers and of the platform on which to implement the system (defined according to possible interaction with trainsheep activity to CNR-IOM – Trieste headquarters);
- design of the implementation logic, based on the use of multiple data, for the "intelligent" sampling of the interested area
- hardware implementation
- identification and implementation of the most appropriate algorithms to support experimental analysis based on data clustering

Engineering-design contribution of the proposal

Design and implementation of a sensors system controlling the microscopy position based on appropriately selected transducers; design and development of appropriate software to support the analysis of the experimental data.