DC 7: Compressive detection techniques for wide-field multiphoton microscopy.

Project Description: The main objective of the doctoral candidate will be the design of light detection modules for multidimensional nonlinear microscopy with structured light and compressive sensing. The candidate will develop new methods and algorithms to combine information from different sensors based on data fusion techniques. Also new algorithms for compressive sensing with spatial modulation and multiple detectors. In collaboration with other doctoral candidates of the network, the candidate will work on the 8integration of the detection modules in a nonlinear microscope and in the evaluation of the performance using phantoms.

Expected Results: Prototype of a detection module with multiple sensors for nonlinear microscopy with structured illumination and compressive sensing. New algorithms for image reconstruction with compressive sampling based on data fusion techniques providing high resolution in short measurement times. Performance assessment and validation of the system with phantoms.

Requirements

- Internationally recognised master-equivalent degree in fields of science or engineering related with optics or photonics. The degree must be completed by the start of the PhD at UJI.
- Degrees issued within the European Higher Education Area (EHEA) must have an equivalent to 300 ECTS, out of which a minimum of 60 ECTS must have been obtained in postgraduate studies.
- Excellent academic record, previous research experience, and a strong commitment for scientific research.
- English working knowledge

Host Insititution: UJI (Castellón de la Plana, Spain)
Supervisor: Dr. Enrique Tajahuerce

Estimated gross allowance: 30,876 €/year (3.5% increase on an annual basis)

PhD institution: UJI

Secondment 1	**Secondment 2**	**Secondment 3**
Partner: POLIMI Supervisor: Prof. Cosimo D'Andrea	Partner: CWI Supervisor: Dr. Felix Lucka	Partner: POLIMI Supervisor: Prof. Cosimo D'Andrea

Planned Starting Date: 01/11/2023 **Application Deadline:** 15/05/2023

Contact: tajahuer@uji.es

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