

## “Investigation of Algorithms for Quality Improvement and Tomography Capabilities in X-ray imaging systems”

**Position:** Researcher at Universidad Carlos III de Madrid, with possibility of PhD

**Contract duration:** 1 year, renewable

### Project Description

The candidate will work in a line of research carried out by the Bioengineering Group at Carlos III University (BiiG), with wide experience in imaging focused the advance in radiology systems focusing on improving the image quality, reducing the radiation doses received by the patient and bringing tomography to situations in which a CT scanner is unavailable for different reasons, such as reduced patient mobility (i.e. during surgery, or ICU), high cost (developing countries, rural areas) or space limitations (i.e. in an ambulance). It is an investigation with clear transfer to the industry, since it counts with the participation of the collaboration by the company SEDECAL S.A., among the leaders in X-ray imaging systems worldwide. The company SEDECAL, which is interested in incorporating these new techniques to its new generation of radiological equipment, participates with personal and resources.

In order to face this important technological challenge with the difficulties of working with real systems, we have a multidisciplinary team including Hospital Gregorio Marañón, Hospital Clínico Veterinario Complutense, Michigan State University (US) and University of Michigan (US): radiologists to keep the clinical focus in mind, engineers with wide experience in X-ray imaging, reconstruction and optimization.

The candidate will be part of the imaging processing software team participating in the design, development and test phases, using the X-ray equipment available at the Gregorio Marañón Hospital and the UC3M, which includes an X-ray infrastructure without match in Spain: 4 micro-CT systems, 2 advanced radiology systems with both table-bucky and wall-stand, a vertical X-ray system with tomosynthesis capabilities, a C-arm and a realistic whole body phantom, together with in-house developments on simulation, calibration, reconstruction and post-processing software that will be used as the starting point.

### Profile and Requirements

Applicants should have a Bachelor's or Master's Degree in Telecommunications, Biomedical or Electrical Engineering (or equivalent), Physics or Math and basic knowledge of X-ray imaging.

Specific requirements:

- Experience with demonstrated competence in imaging processing.
- Experience with demonstrated competence in programming.
- Experience with demonstrated competence in machine learning / deep learning.
- Good English level (at least at reading, since most of the documents will be in English).

### Application

Application must contain letter of motivation, detailed curriculum vitae and transcripts of B.Sc./M.Sc. degrees (with grades). To apply, please send the required documents with subject “INNPROVE candidate” to: [monica.abella@uc3m.es](mailto:monica.abella@uc3m.es).

