



## Thesis Project Form

**Title (tentative):** Artificial Intelligence and Robotic Microsurgery

**Thesis advisor(s):** Casadio Maura, Giulio Dagnino (Twente University)

**E-mail:** Maura.Casadio@unige.it

**Address:** Via Opera Pia 13, 16145 Genova (ITALY)

**Phone:** (+39) 010 33 52749

### Description

#### Motivation and application domain

The project aims to create novel AI robotic technologies that will allow surgeries of the digestive tract previously not possible.

#### General objectives and main activities

The main goal is to create AI- and image-guided miniaturized robots that navigate inside the patient to operate in a synergistic and collaborative way. Such AI-powered instruments are capable of performing surgical procedures that go beyond contemporary minimally invasive surgery. The trainee will apply medical imaging, simulation, and artificial intelligence to make surgical robots capable of cooperating with the surgeon, and to switch to autonomous actions when needed.

#### Training Objectives (technical/analytical tools, experimental methodologies)

The trainee will learn cutting edge technologies in the field of robotics, imaging, and AI. The trainee at the end of the traineeship will have acquired the following skills/competences:

â€¢ Developed programming skills

â€¢ Developed image processing skills

â€¢ Developed skills on designing and conducting scientific experiments

â€¢ Developed skills on acquiring, processing and critically analyzing experimental data

â€¢ Developed communication competences: writing scientific reports and presenting at a high academic level

â€¢ Developed organization skills in the context of a project team within a clinical environment

**Place(s) where the thesis work will be carried out:** MITIC Lab, Dept. of Surgical Sciences, University of Turin

### Additional information

**Maximum number of students:** 1