



PhD in BIOINGEGNERIA / BIOENGINEERING - 38th cycle

THEMATIC Research Field: ADAPTIVE TRAINING CURRICOLA IN SURGICAL ROBOTICS

Monthly net income of PhDscholarship (max 36 months)

€ 1250.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Surgical training is particularly demanding in case of robotic surgery.
This can be accomplished using ex-vivo tissue, phantoms and simulation environments.
The latter allow for precise performance metrics evaluations, so to offer the trainee a feedback evaluation of the improvements accomplished.
This PhD project will allow introducing a novel training environment to improve the training performances of practitioners through

- 1) a realistic simulation environment, creating tasks with different level of difficulties;
- 2) novel performance indicators
- 3) an adaptive curriculum tailored on the trainee performances.

www.nearlab.polimi.it/medical

Methods and techniques that will be developed and used to carry out the research

The following computer vision methodologies will be developed:

- 1) Graphical design in a robotic simulated environment
- 2) Experimental design and validation
- 3) Machine learning techniques for model fitting

The work will be carried out in collaboration with Istituto Europeo di Oncologia.

Educational objectives

- Learning to organize and manage a research project



	<ul style="list-style-type: none"> - Programming/ robot control/ data analysis - Team-work capabilities - Student supervision and mentoring - Public speaking and outreach activities
Job opportunities	Academia (in Italy or abroad) Research centers Hospitals Industry: medical robotics, industrial robotics
Composition of the research group	1 Full Professors 1 Associated Professors 3 Assistant Professors 15 PhD Students
Name of the research directors	PROF. ELENA DE MOMI

Contacts
PROF. ELENA DE MOMI elena.demomi@polimi.it

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--

Scholarship Increase for a period abroad	
Amount monthly	625.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Educational activities: funding for participation in courses, summer schools, workshops and conferences.</p> <p>Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD student.</p> <p>There are various forms of financial of for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities within the limits allowed by the regulation.</p> <p>A desk and a PC will be given to the student for the time needed to carry out research, with accesso to HPC resources (internal and external, e.g., from CINECA).</p>