



PhD in BIOINGEGNERIA / BIOENGINEERING - 38th cycle

THEMATIC Research Field: DESIGN AND DEVELOPMENT OF A NOVEL PEDIATRIC SURGERY ROBOT

Monthly net income of PhDscholarship (max 36 months)

€ 1325.0

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

Microsurgeries are demanding operations that required high precision and dexterity. They also represent a surgical area in which robotics can have a deep impact, helping surgeons perform more precise and safer operations, or even pioneer previously impossible procedures. Surgery on small pediatric patients, such as newborns, can be consider microsurgery given the small size and fragility of the anatomy. This research will contribute to the area of minimally invasive robot-assisted microsurgery through the development of a novel robotic device for these small patients. It will build upon results from IIT's Biomedical Robotics Lab (<https://advr.iit.it/>) to create the next generation of robotic systems for high precision / high quality pediatric operations. This will involve the mechatronic refinement and control of a new robotic device, as well as the evaluation and testing of the new system in collaboration with our partner surgeons from Gaslini Pediatric Hospital (Genoa).

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

Computer-Assisted Design (CAD), additive manufacturing, embedded systems, optical and EM tracking systems, control systems, result statistical analysis

Educational objectives

During this PhD program the student will develop expertise in surgical robotics, medical device design, control systems, user interfaces and usability analysis.



Job opportunities	Knowledge gained during this PhD can lead to careers in academics, medical device industry, or as entrepreneurs heading new start-up companies, as attested by the experience of our recent PhD graduates.
Composition of the research group	1 Full Professors 1 Associated Professors 1 Assistant Professors 15 PhD Students
Name of the research directors	De Momi-De Mattos-Caldwell-Berselli

Contacts	
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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	662.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Premiality Premialities will be recognized to the PhD student, up to EURO 1.000,00 (gross amount after completion of the II year) and up to EURO 2.000,00 (gross amount, after the completion of the III year) provided that they demonstrate a significant contribution to the growth of scientific excellence the industrial valorization of research, the networking and communication activities of the Research Groups.