

# Politecnico di Milano

## PhD in Bioengineering

### Research Title: EMG-based control of lower limb prosthetic systems

<b>Scholarships and Financial support</b>	
Monthly net income of PhD scholarship (max 36 months)	€. 1200 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Number of scholarships	1
Beginning of PhD	May 1, 2017
Deadline for application	March 6, 2017
<b>Context of the research activity</b>	
Motivations and objectives of the research in this field	<p>The aim of this project is to develop novel control systems for lower limb prostheses which can integrate, through e.g. sensor fusion algorithms, information on the muscular activation of the user by means of EMG sensing, to improve the functionality of the device and address safety issues.</p> <p>The project will be carried out at the Advanced Robotics dept of IIT, in collaboration with the Rehab Technologies dept. of IIT. <a href="http://www.iit.it">www.iit.it</a></p>
Methods and techniques that will be developed and used to carry out the research	<p>During / at the completion of this PhD, the student will be able to:</p> <ul style="list-style-type: none"><li>• Autonomously design complex control systems</li><li>• Work in a real-world scenario by operating with both engineers and clinicians</li><li>• Develop a solid background in medical and prosthetic devices</li></ul>

Educational objectives	<ul style="list-style-type: none"> <li>- Team work in robotics research</li> <li>- International collaboration</li> <li>- Testing activities on patients</li> </ul>
Job opportunities	<p>After the completion of the PhD course, the candidate will have opportunities of continuing the research in robotics worldwide. Graduated students from POLIMI were hired in prestigious companies dealing with robotics research (e.g. KUKA, Germany).</p>
Composition of the research group	<p>POLIMI          Number of Full Professors 1          Number of Assistant Professors 1          Number of Post-Docs 1          Number of PhD students 10  <a href="http://www.nearlab.polimi.it/medical">www.nearlab.polimi.it/medical</a></p>
Names of the research directors	<p><i>Matteo Laffranchi, PhD, Rehab Technologies, IIT</i>  <i>Leonardo De Mattos, PhD, Advanced Robotics, IIT</i></p> <p><i>Academic supervisors:</i>  <i>Elena De Momi, PhD (POLIMI)</i>  <i>Giancarlo Ferrigno, Prof (POLIMI)</i></p>
E-mail address, phone number and web-page	<p><i>POLIMI</i>  <i>Elena De Momi</i>          0039 02 2399 9017  <a href="mailto:elena.demomi@polimi.it">elena.demomi@polimi.it</a>  <a href="http://www.nearlab.polimi.it/medical">www.nearlab.polimi.it/medical</a></p>
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	<ol style="list-style-type: none"> <li>1. Istituto Italiano di Tecnologia</li> <li>2. Politecnico di Milano</li> <li>3. Istituto Nazionale Assicurazione Infortuni sul Lavoro (INAIL)</li> </ol>
<b>Additional support</b>	
<p><u>Housing:</u>          financial aid per PhD student per year (gross amount)</p>	<p><u>Foreign students* inserire solo se rilevante</u>          1<sup>st</sup> year: ....euros per student          2<sup>nd</sup> year..... euros per student          3<sup>rd</sup> year: ....euros per student</p> <p>(max number of financial aids available...., given in order of merit)</p> <p><u>Out-of-town residents (more than 80 Km out of Milano)</u>          1<sup>st</sup> year: ...euros per student          2<sup>nd</sup> year: ...euros per student</p>

	3 <sup>rd</sup> year: ... euros per student
<u>Funding for educational activities</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): funding per PhD student per year	1 <sup>st</sup> year: 00 euros per student 2 <sup>nd</sup> year: 00 euros per student 3 <sup>rd</sup> year: 00 euros per student
<u>Teaching assistantship:</u> availability of funding in recognition of support to teaching activities by the PhD student	There are various forms of financial aid 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 regulations.
<u>Computer availability:</u>	1 <sup>st</sup> year: indicate <i>individual use or shared use</i> 2 <sup>nd</sup> year: indicate <i>individual use or shared use</i> 3 <sup>rd</sup> year: indicate <i>individual use or shared use</i>
<u>Desk availability:</u>	1 <sup>st</sup> year: indicate <i>individual use or shared use</i> 2 <sup>nd</sup> year: indicate <i>individual use or shared use</i> 3 <sup>rd</sup> year: indicate <i>individual use or shared use</i>