

# PhD In Information Technology

**Research Area n. 1 Title: Computer Science and Engineering**

**Research Field: “*Mixed Design-time/Run-time approach to Application AutoTuning in Heterogeneous Architectures*”**

<b>Scholarships and Financial support</b>	
Monthly net income of PhD scholarship (max 36 months)	€. 1.200 (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	1/5/2017
Deadline for application	13/03/2017
<b>Context of the research activity</b>	
Motivations and objectives of the research in this field	The optimization of HW/SW architectures is becoming even more complex for two main reasons: On one side there is a the trend for having convergence of hw-platforms, thus allocating on a single platform different workloads for cost reason; On the other side there is a wide variety of applications that requires ad hoc platform optimizations to satisfy extra-functional requirements. The two paths are clearly diverging creating the need of methodologies to alleviate and reduce the gap.
Methods and techniques that will be developed and used to carry out the research	The research aims at developing autotuning techniques tailored to systems ranging from embedded mixed critical to supercomputing, to optimize extra-functional properties. These methodologies should rely on a combination of static and dynamic characterization of the application behavior and hw-platform to improve the tuning quality as well as minimizing the overhead.
Educational objectives	The student will acquire strong skills in system software development (typically C/C++/Python) and/or in hardware design (Verilog/VHDL)

Job opportunities	Recent graduates in this field have been hired by major semiconductor and technology companies, and supercomputing labs. Post-Doc research opportunities are also available.
Composition of the research group	The student will be part of the System Architecture GROUP <a href="http://sagroup.ws.dei.polimi.it/?page_id=7">http://sagroup.ws.dei.polimi.it/?page_id=7</a>
Names of the research directors	Gianluca Palermo
E-mail address, phone number and web-page	<a href="mailto:Gianluca.palermo@polimi.it">Gianluca.palermo@polimi.it</a> +39 022399 3552 <a href="http://home.deib.polimi.it/gpalermo">http://home.deib.polimi.it/gpalermo</a>
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1.CINECA – Italy 2.THALES - France 3. IT4I - Czech republic 4. University of Porto - Portugal 5. ETH Zurich - Switzerland
<b>Additional support</b>	
<u>Educational activities</u> (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per year	2nd year: 1.370 euro per student 3rd year: 1.370 euro 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: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>
<u>Desk availability</u> :	1 <sup>st</sup> year: <i>individual use</i> 2 <sup>nd</sup> year: <i>individual use</i> 3 <sup>rd</sup> year: <i>individual use</i>