



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 38th cycle

Research Area n. 3 - Systems and Control

THEMATIC Research Field: SWITCHED CONTROL OF TRANSPORTATION AND ELECTRO-MECHANICAL SYSTEMS

Monthly net income of PhDscholarship (max 36 months)

€ 1300.0

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

Context of the research activity

<p>Motivation and objectives of the research in this field</p>	<p>The objective of the research is to design energy-aware switching control strategies in the field of transportation and electromechanical systems. Particular attention will be devoted to the railway sector. Here, new both theoretical and application challenges are related to the need of controlling the exchange of power among trains in the same substation in order to recover braking energy and optimize the power consumption from the main grid, while adopting collaborative ecodrives based strategies.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research will be carried out, depending on specific application, by using a subset of control techniques taken from Switching Control, Model predictive control, Sliding Mode Control, Distributed Control via AIMD (Additive Increase Multiplicative Decrease).</p>
<p>Educational objectives</p>	<p>The research program offers advanced training in the topics related to dynamical systems, control and identification. A specific focus will be on railway applications in order to offer a strong preparation in this industrial field.</p>
<p>Job opportunities</p>	<p>The PhD graduates have opportunities both in the university and in the industry. The intensive collaboration with industrial partners allows to find a satisfactory job</p>



	position in industry. Job opportunities abroad are also frequently offered.
Composition of the research group	1 Full Professors 0 Associated Professors 2 Assistant Professors 1 PhD Students
Name of the research directors	Gian Paolo Incremona

Contacts	
gianpaolo.incremona@polimi.it 0223999686 https://www.deib.polimi.it/ita/personale/dettagli/1310754	

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	650.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: Alstom Ferroviaria</p> <p>EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student 5.300,25 Euro per student</p> <p>TEACHING ASSISTANTSHIP: (availability of funding in recognition of supporting 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.</p> <p>COMPUTER AVAILABILITY: individual use</p> <p>DESK AVAILABILITY: individual use</p>

