



# PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 37th cycle

Research Area n. 1 - Computer Science and Engineering

**THEMATIC Research Field: DISTRIBUTED REINFORCEMENT LEARNING FOR INDUSTRY  
4.0**

**Monthly net income of PhDscholarship (max 36 months)**

**€ 1350.0**

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

## Context of the research activity

<b>Motivation and objectives of the research in this field</b>	Smart factories are complex manufacturing ecosystems where several machines and humans interact to make the production as efficient as possible. Managing such a complex system is a challenging task where artificial intelligence techniques can play a central role. The goal of this research is to produce robust and flexible control strategies that can allow to coordinate the functioning of several industrial robots using a decentralized approach.
<b>Methods and techniques that will be developed and used to carry out the research</b>	During the research, the PhD student will study the basics of machine learning and will deepen the knowledge of reinforcement learning approaches, with particular attention to methodologies aimed at solving decentralized partially-observable sequential decision-making problems.
<b>Educational objectives</b>	During the research, the candidate will develop skills to explore the state of the art and to identify which topics still need to be covered and can be advanced by the research project. Furthermore, the PhD student will learn to communicate the achieved research results both orally and through publications.
<b>Job opportunities</b>	Nowadays, completing a PhD in the machine learning field gives unique job opportunities. Recent PhD graduates have found employment as post-doc in the



	most prestigious universities and recent centers in Europe or have become researchers in one of the top tech companies.
<b>Composition of the research group</b>	4 Full Professors 4 Associated Professors 1 Assistant Professors 25 PhD Students
<b>Name of the research directors</b>	Marcello Restelli

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

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	564.01 €
<b>By number of months</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p>LIST OF UNIVERSITIES, COMPANIES, AGENCIES AND/OR NATIONAL OR INTERNATIONAL INSTITUTIONS THAT ARE COOPERATING IN THE RESEARCH: 1. Politecnico di Milano; 2. Siemens Austria</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 per year 2nd year: euros per student (1534) 3rd year: euros per student (1534)</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:</p>



1st year: individual use

2nd year: individual use

3rd year: individual use

DESK AVAILABILITY:

1st year: individual use

2nd year: individual use

3rd year: individual use