



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 40th cycle

Research Area n. 1 - Computer Science and Engineering

PARTENARIATO PNRR Research Field: MACHINE LEARNING FOR CONSTRAINED SEQUENTIAL DECISION MAKING PROBLEMS WITH SINGLE AND MULTIPLE AGENTS

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

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 research activities focus on the interactions between the fields of algorithmic game theory and online machine learning. More precisely, the activities aim to study strategic-interaction settings with complete or incomplete information. These settings include both single-agent sequential-decision-making models and multi-agent game-theoretic models for persuasion, contracts, and leadership. In addition, the research aims to focus on constrained optimization over those settings.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The methods needed for the study are those developed in theoretical computer science - including computational complexity, approximation algorithms, combinatorial optimization, convex programming - and in theoretical machine learning - including statistical bounds, regret bounds, and PAC learning. The nature of the results expected is primarily theoretical and in terms of upper/lower complexity results, upper/lower regret bounds. In addition, an experimental activity is required to validate empirically the algorithms developed in the research activities.</p>
<p>Educational objectives</p>	<p>The primary objective concerns the knowledge of foundational tools for artificial intelligence and machine learning in the settings of interactive decision making. The</p>



	PhD students will learn the theory behind machine learning and the guarantees that can be provided for learning algorithms.
Job opportunities	Researcher, data scientist, machine learning scientist
Composition of the research group	1 Full Professors 0 Associated Professors 2 Assistant Professors 0 PhD Students
Name of the research directors	Prof.Castiglioni, Prof. Marchesi, Prof. Gatti

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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	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<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 5707,20 Euro</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> <p>In the framework of PNRR - PARTENARIATO ESTESO FUTURE ARTIFICIAL INTELLIGENCE</p>



RESEARCH

D.D. 341 del 15/03/2022 Avviso pubblico per la presentazione di Proposte di intervento per la creazione di Partenariati estesi alle università, ai centri di ricerca, alle aziende per il finanziamento di progetti di ricerca di base nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Istruzione e ricerca Componente 2 Dalla ricerca all'impresa Investimento 1.3, finanziato dall'Unione europea NextGeneration EU CUP: D53C22002380006 DECRETO DI CONCESSIONE: D.D. 1555 del 11/10/2022