



PhD in DATA ANALYTICS AND DECISION SCIENCES - 39th cycle

**PARTENARIATO PNRR Research Field: MACHINE LEARNING MODELS AND SOLUTION
FOR PLANT ASSET AND ENERGY MANAGEMENT FOR THE DEVELOPMENT OF A
SUSTAINABLE AND ADAPTIVE FACTORY OF THE FUTURE**

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

**Motivation and objectives of the research
in this field**

The concept of the "Factory of the Future" is a global trend, and governments and industries are investing to transform traditional manufacturing into smarter, more sustainable processes. Sustainability goals not only yields economic advantages but also strategically situates companies within a progressively competitive and dynamic manufacturing scenario. Furthermore, it holds the capacity to stimulate innovation within the manufacturing sector and various industries.

The research activity is financed by LEONARDO S.p.A. in the framework of the MICS 3A-Italy (Partenariato Esteso per il Made in Italy Circolare e Sostenibile PE0000004) - Spoke 8 as part of the National Plan on Recovery and Resilience (PNRR - Missione 4, Componente 2 Dalla Ricerca all'Impresa, Investimento 1.3). Norms of Reference: CUP B83D22001120004, D.D. 1551 del 11/10/2022. 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 - NextGenerationEU.



Methods and techniques that will be developed and used to carry out the research	Methods and techniques based on Machine learning algorithms, Statistical quality monitoring and transfer learning can help to reach targets such as energy consumption forecasting, Optimization of Energy Usage, anomaly detections and asset Health Monitoring.
Educational objectives	The field of machine learning is constantly evolving. Research in this field considering the proposed topic will have a cross-disciplinary impact, involving different fields such as electrical and mechanical engineering and data science.
Job opportunities	Data analyst, Industry 4.0 specialist and energy manager specialist.
Composition of the research group	1 Full Professors 1 Associated Professors 2 Assistant Professors 3 PhD Students
Name of the research directors	Loredana Cristaldi, Christian Laurano

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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
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research:
1. Leonardo



2. IDSIA Dalle Molle Institute for Artificial Intelligence (SUPSI-USI)
3. E.ON Energy Research Center at RWTH Aachen University

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.