POLITECNICO DI MILANO

PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 39th cycle

Research Area n. 1 - Computer Science and Engineering

PNRR 118 PA Research Field: DIGITALIZATION OF ENVIRONMENTAL MONITORING PROCESSES

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	PAs must face the digital transition which requires the redesign of strategies, organizational models and processes to optimize effectiveness, and efficiency. Data collection enabled by IoT and Remote Sensing can boost environmental monitoring through a mix of human-led and machine-led analysis. The doctoral research aims at setting up a multi-disciplinary methodology (computer science, computer vision, big data, Earth Observation, social sciences, economics) for bringing digital innovation competences to the PAs, through Artificial Intelligence techniques designed to support territory observation.
Methods and techniques that will be developed and used to carry out the research	The research will implement AI-powered multi-modal data analysis tools enabling innovative territory monitoring processes, including methods and techniques for interpreting time series data and remote sensing images for detecting multiple environment hazards.
Educational objectives	The educational objectives involve the capacity to analyze the current policies and processes of the PA in the environment protection sector, to resedign such policies and processes so as to maximize efficiency and efficacy through the use of digital tools (AI-powered, multi-modal data analytics) and to deploy and assess the designed digitalized process in complex public organizations.

Job opportunities	The doctor will deploy the acquired skills in the PA and in the industry. Target employers are the environment agencies of the PA and the data-hungry industries such as the enterprises servicing the Earth Observation, agriculture, construction and logistics sectors.
Composition of the research group	2 Full Professors 2 Associated Professors 2 Assistant Professors 3 PhD Students
Name of the research directors	Piero Fraternali

Contacts
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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

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	ARPA Lombardia, Agenzia regionale per la protezione dell'ambiente della Lombardia.
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	Technische Universität Berlin. Università pubblica.
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
The application of artificial intelligence techniques and computer vision to environmental monitoring makes it possible to realise new, more precise and effective forms of environmental intelligence that flank and enhance the control capabilities of the public administration in charge of land governance. The proposal aims to facilitate the digital transition of public administrations, contributing to the

redesign and simplification of organisational models, as well as to the selection and adoption processes of enabling digital technologies and solutions, in order to ensure greater efficiency of environmental monitoring processes through the use of artificial intelligence and computer vision tools.

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
5.707,20 Euro per student

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.