



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

Research Area n. 1 - Computer Science and Engineering

PNRR\_351\_PUBBL\_AMMIN Research Field: DIGITALIZATION OF ENVIRONMENTAL  
MONITORING PROCESSES

<b>Monthly net income of PhDscholarship (max 36 months)</b>
<b>€ 1250.0</b>
In case of a change of the welfare rates during the three-year period, the amount could be modified.

<b>Context of the research activity</b>	
<b>Motivation and objectives of the research in this field</b>	<p>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.</p>
<b>Methods and techniques that will be developed and used to carry out the research</b>	<p>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.</p>
<b>Educational objectives</b>	<p>The educational objectives involve the capacity to analyze the current policies and processes of the PA in the environment protection sector, to redesign such policies and processes so as to maximize efficiency and efficacy</p>



	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.
<b>Job opportunities</b>	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.
<b>Composition of the research group</b>	2 Full Professors 2 Associated Professors 0 Assistant Professors 3 PhD Students
<b>Name of the research directors</b>	Piero Fraternali, Marco Brambilla

<b>Contacts</b>	
Piero Fraternali 02 23993640 piero.fraternali@polimi.it <a href="https://fraternali.faculty.polimi.it">https://fraternali.faculty.polimi.it</a>	
Marco Brambilla 02 2399 3651 marco.brambilla@polimi.it <a href="https://marco-brambilla.com/">https://marco-brambilla.com/</a>	

<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>	625.0 €
<b>By number of months</b>	6

<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	ARPA Lombardia
<b>By number of months at the company</b>	6
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	Technische Universität Berlin
<b>By number of months abroad</b>	6



**Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information**

**ATTINENZA ALLA TEMATICA PRESCELTA**

La proposta ha come scopo quello di la transizione digitale delle pubbliche amministrazioni, contribuendo alla riprogettazione e semplificazione dei modelli organizzativi, nonché ai processi di selezione e adozione delle tecnologie e soluzioni digitali abilitanti, al fine di garantire una maggiore efficacia, efficienza ed economicità dell'azione pubblica

**PUBLIC ADMINISTRATION WHERE THE CANDIDATE WILL ATTEND THE STAGE**

ARPA Lombardia - Lombardy Regional Environmental Protection Agency - deals with prevention and protection of the environment, supporting regional and local institutions in multiple activities: from the fight against atmospheric and acoustic pollution to interventions for water protection surface and underground, from monitoring electromagnetic fields to investigations on soil contamination and remediation processes. <https://www.arpalombardia.it/>

**INSTITUTION OR COMPANY WHERE THE CANDIDATE WILL SPEND THE PERIOD ABROAD**

Technische Universität Berlin. <https://www.tu.berlin/>  
In-depth study of data analysis methods.

**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

5.095,96 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.

**COMPUTER AVAILABILITY:** individual use

**DESK AVAILABILITY:** individual use