POLITECNICO DI MILANO

PhD in INGEGNERIA AMBIENTALE E DELLE INFRASTRUTTURE / ENVIRONMENTAL AND INFRASTRUCTURE ENGINEERING - 38th cycle

Research Area n. 3 - Environmental and Hydraulic Engineering and Geomatics

PARTENARIATO PNRR Research Field: MULTI-SCALE MAPPING OF GREEN BIODIVERSITY IN URBAN AREAS

Monthly net income of PhDscholarship (max 36 months)
€ 1195.5
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	**CN-Biodiversità: CENTRO NAZIONALE PER LA BIODIVERSITA'** CUP D43C22001250001 – Decreto di concessione D.D. 1034 del 17/06/2022 Bando D. D. 3138 del 12/16/2021 rettificato con D.D. 3175 del 18/12/2021 "Avviso pubblico per presentazione Proposte di intervento per il Potenziamento di strutture di ricerca e creazione di "campioni nazionali" di R&S su alcune Key Enabling Technologies da finanziare nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Componente 2 Investimento 1.4 "Potenziamento strutture di ricerca e creazione di "campioni nazionali di R&S" su alcune Key Enabling Technologies" finanziato dall'Unione europea - NextGenerationEU". In the framework of researches aimed to investigate the compartment of urban biodiversity and to evaluate the related ecosystems services, the development and assessment of effective mapping, monitoring, and management of green areas is necessary, both to preserve and to integrate the existing urban natural

	preserve and to integrate the existing urban natural resources. In order to analyze urban biodiversity, a first step of typological characterization of urban ecosystems and their plant species has to be faced, to produce highly detailed maps of vegetation typology in large urban areas. To this aim, several sources of data have to be merged. Apart the traditional surveys in field, time consuming and suitable for limited areas, on larger scale the use of remotely sensed data provide a very powerful tool. On the other hand, drone surveys can provide details not reachable in satellite images. The comparison and integration of these very different data require the development and assessment of specific procedures.
Methods and techniques that will be developed and used to carry out the research	Traditional and innovative remote sensing classification methods will be applied to multitemporal, multispectral and multiresolution images, acquired by different sensors and platform. Innovative procedure will be studied to optimize the use of multispectral drone images acquired on sample areas in classification procedures of aerial and satellite images.
Educational objectives	High level formation in advanced analysis of multispectral, multiresolution remotely sensed and geographical data.
Job opportunities	Earth Observation or Drone Surveys companies.
Composition of the research group	2 Full Professors 2 Associated Professors 1 Assistant Professors 4 PhD Students
Name of the research directors	Giovanna Sona

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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	597.76 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research: •Università degli studi Milano-Bicocca   •Università degli studi di Milano- Dip. Sc. Agrarie   •BOKU - University of Natural Resources and Life Science   •Inst. of Geomatics (Vienna, AU)   •CNR-IREA- Milano   •ERSAF - Ente di Ricerca Scientifica ed Alta Formazione   Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): approximately 1620,00 euros per PhD candidate per year, on average.   Teaching assistantship (availability of funding in recognition of support to 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 and desk availability: individual assignment for the entire career. PhDs will have access to CFDHub (www.cfdhub.polimi.it), an Interdepartmental laboratory of PoliMi, with a stateof-the-art infrastructure and scientific computing system.