POLITECNICO DI MILANO

PhD in MODELLI E METODI MATEMATICI PER L'INGEGNERIA / MATHEMATICAL MODELS AND METHODS IN ENGINEERING - 38th cycle

THEMATIC Research Field: DEVELOPMENT OF MODELS AND ALGORITHMS IN THE FIELD OF FUNCTIONAL DATA ANALYSIS FOR SATELLITE MONITORING OF NATURAL HAZARDS

Monthly net income of PhDscholarship (max 36 months)
€ 1325.0 In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Reasearch, 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 research fellow will be involved in the research activities related to the agreement between Politecnico di Milano and Centro Nazionale delle Ricerche ¿ Istituto per il Rilevamento Elettromagnetico dell¿Ambiente (CNR-IREA). The specific research program of the PhD project is oriented to the development of models and algorithms aimed at satellite monitoring of natural hazards with focus on Italy.
Methods and techniques that will be developed and used to carry out the research	The models and algorithms will be developed in the context of functional data analysis, object-oriented data analysis, spatial statistics, and non-parametric forecasting and will mainly, but not exclusively, apply to synthetic aperture radar (SAR) data processed by differential interferometry techniques (InSAR). Prior experience with the analysis of records from natural hazard monitoring and in some of the methodological fields hereabove mentioned is appreciated although not mandatory. The project is at the intersection of different fields of investigation; the PhD-candidate is thus expected to interact with a multidisciplinary team of researchers.
Educational objectives	From the training point of view, the research project is aimed at the professional growth of a researcher which, at the end of the PhD, will be provided with both rare but

	sought transversal skills (both theoretical and applied) in advanced mathematical-statistical modeling for complex data with spatial and temporal dependence and with an ability of fruitfully interacting with researchers from other disciplines from academia and industry
Job opportunities	At the end of the PhD program, the candidate will be suited for positions in advanced national and international research centers both in academia (in research groups working in the field of mathematical modeling, statistics, machine learning or remote sensing) and industry (not exclusively in companies focusing on remote sensing technologies but also in many industrial, financial, and marketing firms that find part of their current core business in big data analytics).
Composition of the research group	8 Full Professors 14 Associated Professors 12 Assistant Professors 27 PhD Students
Name of the research directors	Simone Vantini, Francesco Casu

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Additional support - Financial aid per PhD student per year (gross amount)			
	1st year	**2nd year**	**3rd year**
Housing - Foreign Students	1500.0 € per student	0.0 € per student	0.0 € per student
	max number of financial aid available: 3, given in order of merit ..		
Housing - Out-of-town residents (more than 80Km out of Milano)	--		

Scholarship Increase for a period abroad	
Amount monthly	662.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences): financial aid per PhD student per year

1st year: max 1.800,47 euros per student;
2nd year: max 1.800,47 euros per student;
3rd year: max 1.800,47 euros per student.
The PhD students are encouraged to take part in activities related to teaching, within the limits allowed by the regulations.
1 individual PC per student + several shared PC.
Access to one cluster with 32 processors and 384 GB RAM, and to several multi-processor servers and 1 individual desk per student are granted.