



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

Research Area n. 3 - Systems and Control

**PARTENARIATO PNRR Research Field: OPTIMIZATION PROBLEMS IN SOFT AND ACTIVE  
MOBILITY**

**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**

Active and soft mobility is assuming a particular importance in the field of sustainable mobility. This is attracting a great deal of investments at national and local level, as well as from private subjects. It has been proved that the investments in the field of active mobility are able to create value and employment, besides mitigating the air pollution and improving the health and wellness in the population. The availability of decision support tools that enables the administrators to plan the infrastructure (cycleways, multimodal hubs, charging stations?) become thus of utmost importance. (see the site of an EIT climate kick project: <http://metropolidipaesaggio.it>)

In the framework of PNRR - CN-MS CENTRO NAZIONALE DELLA MOBILITA' SOSTENIBILE Avviso - 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 -



	<p>NextGenerationEU?</p> <p>CUP: D43C22001180001</p> <p>DECRETO DI CONCESSIONE: D.D. 1033 del 17/06/2022</p>
Methods and techniques that will be developed and used to carry out the research	<p>The optimization literature is moving the first steps in this direction, but the area leaves much space to the innovation and the study of models and efficient algorithms that can consider the multiple interests of the involved stakeholders. The candidate will have to develop mathematical models, implement them in Python-MIP or other libraries and include them in a GIS tool, such as QGIS.</p>
Educational objectives	<p>The main objective is to build the knowledge of the candidate in the development of mathematical models for decision making, in particular applied in the planning of soft mobility infrastructures. The candidate will learn how to visualize the results in a suitable graphic interface.</p>
Job opportunities	<p>Besides the academic career in the field of transportation, optimization and civil engineering, the candidate will acquire the skill to work in local authorities technical offices (as for example mobility agencies) that are in charge of proposing solutions that foster soft and active mobility.</p>
Composition of the research group	<p>1 Full Professors 2 Associated Professors 1 Assistant Professors 0 PhD Students</p>
Name of the research directors	<p>Prof. Pietro Belotti, Prof. Federico Malucelli</p>

Contacts	
Professor Pietro Belotti pietro.belotti@polimi.it	
Professor Federico Malucelli federico.malucelli@polimi.it	

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)

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**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**

The candidate will interact with the group of Prof. Paolo Pileri in the design of cycleways. This activity is part of the project MOST: Spoke 5 sustainable mobility.

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

1. University of Bergamo
2. University of Brescia
3. Ecole de Technologie Superieure, Montral (Canada)

*Educational activities* (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year:

- 1<sup>st</sup> year: max (1/3 \* Column ?Budget dottorando?)  
 2<sup>nd</sup> year: max (1/3 \* Column ?Budget dottorando?)  
 3<sup>rd</sup> year: max (1/3 \* Column ?Budget dottorando?)

*Teaching assistanship*: 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:

- 1<sup>st</sup> year: individual use  
 2<sup>nd</sup> year: individual use  
 3<sup>rd</sup> year: individual use

Desk availability:

- 1<sup>st</sup> year: individual use  
 2<sup>nd</sup> year: individual use  
 3<sup>rd</sup> year: individual use

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*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?*

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