



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 41st cycle

Research Area n. 3 - Systems and Control

**THEMATIC Research Field: ADVANCED MULTI-ACTUATION VEHICLE DYNAMICS
CONTROL FOR GROUND VEHICLES**

Monthly net income of PhDscholarship (max 36 months)

1700.0

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

The electrification and the autonomous-driving technology will be the next revolution in mobility, both in urban and in suburban/highway context. The objective of this research is to focus on the development of methods and algorithms for the control of electric, hybrid, autonomous (and partially autonomous) vehicles. The goal of the research activity is to develop advanced and innovative methods in the control of such new generation of vehicles. **Specifically, the focus of this research will be on multi-actuation vehicle dynamics control.** The activities will be developed on mathematical models, dynamic simulators, and on experimental platforms.

Methods and techniques that will be developed and used to carry out the research

The research will follow this path:
Review and assessment of the reference literature and available design/experimental data.
Development of control strategies and algorithms
Validation of different case studies in simulation.
Elaboration of Papers/Articles to be published in the appropriate Journals..

Educational objectives

The candidate will have a unique opportunity to work on a challenging and timely research project, combining both control-oriented and AI/learning-based aspects that are needed to address the challenging and timely topic



	presented above. This entails a growth path for the candidate that will make them acquire different competencies – mainly technical and technological, in the disciplines mentioned in the methodology description. The research outputs will target publishing on international conferences and journals, with specific attention to all the venues of interest for the different facets of the research.
Job opportunities	Expertise in data analysis, machine-learning and control design certainly makes the PhD candidates very appealing for a wide range of high-end positions. These range from the more control-oriented ones to those more related to the considered technologies. Thus, our candidates might apply for positions both in technical companies and in academia.
Composition of the research group	3 Full Professors 3 Associated Professors 35 Assistant Professors 25 PhD Students
Name of the research directors	Prof. Sergio Savaresi

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents	--

Scholarship Increase for a period abroad	
Amount monthly	850.0 €
By number of months	3

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<u>EDUCATIONAL ACTIVITIES</u> (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences). <u>TEACHING ASSISTANTSHIP</u>: 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:

1st year: Yes

2nd year: Yes

3rd year: Yes