Operational Program European Social Fund - Regione Liguria 2014-2020
ASSE 3 "Education and training"

UNIVERSITÀ DEGLI STUDI DI GENOVA

EXCERPT OF INFORMATION SHEET **COMPUTER SCIENCE AND SYSTEMS ENGINEERING**	
GENERAL INFORMATION **STRUCTURE OF THE TRAINING PROJECT**	
DURATION AND ORGANIZATION OF THE COURSE	The course starts officially on 1 of November 2018 and lasts three years. 1. At the end of each year, doctoral students shall present the Teaching Body with a detailed written account of the activities carried out. The Teaching Body may ask for the account to be discussed according to procedures it has established. **Coordinator of the course:** Prof. Giorgio Delzanno; **E-mail address:** Giorgio.Delzanno@unige.it **Department coordinating for research:** Department of IT, Bioengineering, Robotics and Systems Engineering (Dipartimento di Informatica, bioingegneria, robotica e ingegneria dei sistemi – DIBRIS)
TRAINING PROJECT	The following 3 projects/scholarships are activated: **Curriculum COMPUTER SCIENCE (CODICE 7295):** **Project/scholarship 1: Empowered Internet of Things (EmpIoT).** *Months abroad*: 8 *In cooperation with*: - Camelot Biomedical Systems S.r.l. - On AIR S.r.l. - FOS S.r.l. - GTER S.r.l., Innovazione in Geomatica, GNSS e GIS - Vega Research Laboratories S.r.l.s. - CNR IMATI - Polo Distretto Ligure delle Tecnologie Marine - Polo SOSIA *Project/scholarship details*: The project is aimed at strengthening IoT infrastructures for data acquisition, analysis and processing through a combination of approaches that operate at different levels of granularity: software platforms for the development of correct-by-design applications with low-cost sensor networks, application of

deep learning algorithms for image analysis and multivariate data series and in supervised contexts with particular attention for predictive quality of production assets and sensors used in the automotive field, design of new devices to acquire precision data with particular attention for the study of new algorithms for the detection of GNSS signals on smartphones, computational intelligence techniques for the remote management of systems transport (eg automotive, rail and naval), for the optimization of infrastructural resources and to ensure service safety

Project/scholarship 2: Semantic Web and Business Intelligence for Health (SeBIAC).

Months abroad: 8

In cooperation with:
- MAPS S.p.A.
- SurgiQ s.r.l.
- CNR IMATI
- Polo Ligure Scienze della Vita

Project/scholarship details:
The projects is in the research area of semantic interoperability, planning and optimization of hospital process workflows. The project addresses some of the issues of greatest interest for PLSV (Polo Salute), with particular attention to information systems for the management of health facilities (including those aimed at planning and optimization of resource management) and the elaboration and interpretation of big data in health. The proposal declines the activities carried out within the DIBRIS research clusters on Data Science & Engineering and Artificial Intelligence & Multiagent Systems. The proposed activity is focused on the adoption of techniques based on multilingual semantic annotations in the clinical field, through the integration and alignment of relevant ontologies for the area under examination and the introduction of data mining algorithms in order to detect clinical concepts and other significant context information. In particular, the activity involves the extension and tuning of the Clinika tool developed by MAPS. Furthermore, systems will be designed and implemented to support the management of the process and the organization of all pre-admission activities, and for the planning and scheduling of interventions and hospitalization, reducing waste due to inefficiency through further collaboration with SurgiQ.

Curriculum INGEGNERIA DEI SISTEMI (CODICE 7296):

Project/scholarship 3: Monitoring and Control of Industrial and Environmental Systems (MoCoS).

Months abroad: 8

In cooperation with:
- SOFTECO Sismat
- ABIRK ITALIA S.r.l.
- CNR IMATI
- Polo Energia Ambiente e Sviluppo Sostenibile (EASS)
- Polo Transit

Project/scholarship details:
The project is focused on two complementary approaches for the monitoring and control of production systems with particular attention to energy systems, environmental monitoring in urban and industrial areas. The first approach concerns the development and application of decision support systems for planning and control with particular attention to energy and environmental systems with the aim of improving the performance and consumption of

	energy production systems. The development of new energy management systems (EMS) is necessary to allow the transition of the urban district from a simple site of demand to be satisfied (electricity, heating, communication, transport, etc.) to an active actor able to contribute efficiently to a national energy system. The objective of the project is to improve the flexibility of the systems and instruments currently in use considering the possibility of managing a deferrable and adaptable energy demand. This approach, known as "active demand" (or demand response), is proving an increasing interest, as it allows the user to potentially take an active role in the management of the energy system. The activity will concern the development of an energy management system able to coordinate the production of energy (from different technologies including the generation from renewable sources), the accumulation and satisfaction of demand, respecting the technical and network constraints and in order to minimize costs and environmental impacts. EMS will be applied to polygenerative microgrids. The activity will focus on the Savona Campus in the context of the SPM and SEB and Cluster Living Lab Grid projects. The second approach concerns the physical control and monitoring of infrastructures or urban areas through ultra-light drone fleets. In this context, methodologies will be studied for adaptive planning of drone fleets with possible applications in different domains.
PhD FUNDING	The annual gross amount of the grant, including social security expenses to be paid by the recipient, is € 16,500.00. The amount of the doctoral grant shall be increased by 50% for an overall period of not more than 18 months, if the graduate student is authorized to by the teaching body to carry out research abroad. Starting from the first year, each graduate student will have, besides the grant, a budget for research activities in Italy and abroad which will not be less than 10% of the grant.
ADMISSION REQUIREMENTS	
COURSE ADMISSION	Admission is subject to the passing of the selection tests and is conditioned by the positive outcome of the medical examinations, where required, that are carried out in health facilities and aimed at ascertaining the suitability for the specific task in accordance with D. Lgs. No. 81/08.
REQUIRED QUALIFICATION	Degree which has been conferred according to the rules and regulations in force prior to the reform of didactic freedom in universities, or a specialist/II level degree or an equivalent foreign academic qualification.

SELECTION PROCESS	
SELECTION COMMITTEE	The committees are made up of at least 3 university professors for each course; they may be integrated by not more than 2 experts, who may also be foreign nationals, from public and private research institutions and structures.
ADMISSION TEST VENUE	Department of IT, Bioengineering, Robotics and Systems Engineering (Dipartimento di Informatica, bioingegneria, robotica e ingegneria dei sistemi – DIBRIS).
TYPE OF ADMISSION TEST	• Comparative assessment of the qualifications/publications. • Written test (research project). • The interview consists in the discussion of the written test (research project) and the description of the candidate's research area of interest, also on the basis of previous activities stated in his/her scientific-professional curriculum The tests are focused on confirming the candidates' aptitude for scientific research.
METHODS FOR INVITING THE CANDIDATES AND	The **examination schedule** is as follows:

COMMUNICATING THE OUTCOMES OF THE TESTS	• Evaluation of qualifications, curriculum and written test (research project): **23.7.2018** • Interview: **25.7.2018, 9.00 am** at Department of IT, Bioengineering, Robotics and Systems Engineering (Dipartimento di Informatica, bioingegneria, robotica e ingegneria dei sistemi – DIBRIS), Meeting room, 3rd floor. **Candidates can use video conference mode; and, for identification purposes, the candidate must show the original document of which he has deposited a certified copy at the time of application.** The **list of those admitted to the interview** will be affixed at the Department of IT, Bioengineering, Robotics and Systems Engineering (Dipartimento di Informatica, bioingegneria, robotica e ingegneria dei sistemi – DIBRIS). The **final lists** shall be announced on **10th August 2018**, and will appear solely on: • the noticeboard of the relevant research Departments/facilities for the research courses; • the noticeboard of the University; • on the Internet address https://unige.it/usg/it/dottorati-di-ricerca No information whatsoever shall be posted to candidates' domicile.
WRITTEN TEST	The research project (10 pages maximum) has to be attached to the online application form, and it must concern one or more research Projects/grants highlighted in the section "TRAINING PROJECT". The research project will be evaluated as practical test for the selection, together with the evaluation of the qualifications and the scientific-professional curriculum, in order to identify the candidate's aptitude for scientific research in terms of originality, feasibility, clarity in the definition of objectives, methods and expected results.
INTERVIEW	The interview consists in the discussion of the written test (research project) and the description of the candidate's research area of interest, also on the basis of previous activities stated in his/her scientific-professional curriculum During the interview, the candidate shall also prove his/her proficiency in the following foreign language: English. Non-Italian candidates will also have to prove knowledge of the Italian language.
PERCENTAGE VALUES OF TO EACH TEST	To each candidate can be assigned a maximum of 150 points, divided as follows: - comparative assessment of the qualifications/publications: max score 30/30, pass mark 20/30. - Written test (research project): max score 60/60, pass mark 40/60. - Interview: max score 60/60, pass mark 40/60. The final ranking will be drawn up by adding the scores assigned in comparative assessment, written test and interview. Candidates will be selected in compliance with the principles of equal opportunities.
ADDITIONAL CRITERIA FOR ADMISSION TO THE COURSE	In the case of equal grades, the evaluation of candidates' incomes prevails for the assignation of grants, as per D.P.C.M. 9 April 2001.

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