MSCA PF 2023 @UniGe

Supervisor Expression of Interest

MSCA domain
Information Science and Engineering (ENG)

1. **Marta Berardengo**
2. **Giovanni Berselli**
3. **Antonio Caggiano**
4. **Chiara Calderini**
5. **Andrea Formentini**
6. **Flavia Libonati**
7. **Fulvio Mastrogiovanni**
8. **Maurizio Valle**
9. **Gualtiero Volpe**

Università di Genova
UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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1.

First Name	Marta
Last Name	Berardengo
Orcid ID	0000-0002-8625-0822
Other information	https://rubrica.unige.it/personale/UkJBWlNg
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Vibration control and structural monitoring with smart materials
Department	Mechanical, Energy, Management and Transportation Engineering (DIME)
Short description of the department/laboratory/research group	The research group works on different subjects related to mechanical systems and structural dynamics. Current research topics are related to system identification and monitoring, experimental techniques, human-structure interaction and smart materials for vibration attenuation. Smart materials, and particularly piezoelectric materials and shape memory alloys, have been extensively used to the aim of developing new energy-efficient and adaptive vibration reduction methods for light and slender structures.
Candidate fellows must send their candidature with a short description of their profile to the following email address	marta.berardengo@unige.it

Università di Genova
UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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2.

First Name	Giovanni
Last Name	Berselli
Orcid ID	0000-0003-0093-3006
Other information	https://rubrica.unige.it/personale/UkNBXVxr
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Robotics and Mechatronic
Department	Department of Mechanical Engineering
Short description of the department/laboratory/ research group	The Mechanical Computer Aided Design lab focuses on Virtual and Physical Prototyping of Robot Hands and Grippers, Automatich Machines, Digital Twins for Automation.
Candidate fellows must send their candidature with a short description of their profile to the following email address	giovanni.berselli@unige.it

Università di Genova
UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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3.

First Name	Antonio
Last Name	Caggiano
Orcid ID	https://orcid.org/0000-0003-1027-2520
Other information	https://rubrica.unige.it/personale/UkJPX1ho
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Computational mechanics, physics of materials, energy and buildings, NZEBs
Department	Chemistry and Industrial Chemistry
Short description of the department/laboratory/ research group	My scientific expertise and capacity are listed in two major areas: 1. FEM, multiscale, meso-scale, coupling: I have a proven track record in formulating numerical models for describing the non-linear behavior of cohesive-frictional materials under combined physical-mechanical actions. I developed "ad-hoc" computational codes (mostly based on the formulation of FE 0-thickness interfaces, for Discrete Crack procedures) for predicting: (i) meso-scales of Fiber-Reinforced Concrete (FRC), (ii) bond-slip phenomena for monotonic, cyclic, high temperature and strain-rates, (iii) binder hydrations, (iv) Meso-Scale High Temperture, (v) fracture in metals, (vi) microplane model, (vii) eXtended-FEM, (viii) self-healing and (ix) Virtual Element Method. 2. Thermal Energy Storage, Transport, Phase Change Material, Moving boundaries: I started developing these activities with my Alexander von Humboldt 2CENERGY grant, thus moving from my previous field of expertise (fracture mechanics & meso-scale) to new concepts of energy storages, transport, reaction

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	Phase-Field and nano-to-mico scale modelling. 2CENERGY was a booster bringing me in leading position in the field of "Thermal Energy Storages in cementitious systems". Main outputs of 2CENERGY: 12 ISI papers + 5 patents and making strong scientific basis for next projects leaded under my (co-) supervision (2019-22): a) H2020-IA NRG-STORAGE https://cordis.europa.eu/project/id/870114/ b) H2020 FETOPEN Miracle https://cordis.europa.eu/project/id/964450 c) EIG Concert-Japan PoroPCM https://poropcm.eu/?page_id=46, d) H2020 MSCA-IF 0E-BUILDINGS (PI: Dr. Bre) and finally leading with Dr. Dolado (CSIC-ES) the RILEM TC 299TES-Thermal energy storage in cementitious composites (International WG with worldwide TES experts). Since 02.2022, I moved to University of Genova (tenured Associate Prof.), at DICCA department (Italian excellence with modern and high-tech facilities) where I am currently run the BEST project (Bio-based Energy efficient materials and Structures for Tomorrow, n ° SEP 210831160, HORIZON MSCA 2021 SE 01).
Candidate fellows must send their candidature with a short description of their profile to the following email address	antonio.caggiano@unige.it

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tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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4.

First Name	Chiara
Last Name	Calderini
Orcid ID	https://orcid.org/0000-0002-1525-5095
Other information	https://rubrica.unige.it/personale/UkNHX1Nr
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Design of sustainable structures/Structural assessment of monumental structures
Department	Civil, Chemical and Environmental
Short description of the department/laboratory/research group	Civil engineering/Reusable structures/Steel structures/Masonry structures/Sustainability&Conservation
Candidate fellows must send their candidature with a short description of their profile to the following email address	chiara.calderini@unige.it

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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5.

First Name	Andrea
Last Name	Formentini
Orcid ID	https://orcid.org/0000-0003-1018-8513
Other information	https://rubrica.unige.it/personale/V0tCXlNg
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Intelligent battery modules with integrated power electronics, control of AC and DC converter-based microgrids, high performance EV charging systems from low and medium voltage grid, model predictive control of power converters
Department	Electrical, Electronics and Telecommunication Engineering and Naval Architecture Department (DITEN)
Short description of the department/laboratory/ research group	The research group is composed by 2 academics, 2 post-docs and 6 PhD students. The main research topics include high power electronic and drive systems, intelligent battery systems, model predictive control of power electronics and inverter-based microgrids. The group is a friendly and multicultural environment with strong links with industries and research councils. The PI had the opportunity to work in renowned institutions like University of Nottingham and University of Oxford.
Candidate fellows must send their candidature with a short description of their profile to the following email address	andrea.formentini@unige.it

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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Supervisor Expression of Interest

6.

First Name	Flavia
Last Name	Libonati
Orcid ID	0000-0001-6490-1922
Other information	https://rubrica.unige.it/personale/UkJBW19o
MSCA domain	Information Science and Engineering (ENG)
Research focus area	materials design
Department	Department of Mechanical, Energy, Transportation and Management Engineering - DIME
Short description of the department/laboratory / research group	M3M Lab (Multiscale Mechanics of Materials Laboratory) at the University of Genova is focused on the study of biological materials and tissues and advancing the design of novel materials, leveraging the principle of biomimetics and engineering design/manufacturing to unravel the structure-property relationship in biological materials and to yield next-generation smart and multifunctional materials. The research in the M3M groups covers diverse aspects, from multiscale modeling and artificial intelligence to experimental characterization and advanced manufacturing. The group has an international network of collaborations with engineers, biologists, biochemists, physicists, and medical doctors.
Candidate fellows must send their candidature with a short description of their profile to the following email address	flavia.libonati@unige.it

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

MSCA PF 2023 @UniGe

Supervisor Expression of Interest

7.

First Name	Fulvio
Last Name	Mastrogiovanni
Orcid ID	0000-0001-5913-1898
Other information	https://rubrica.unige.it/personale/UkNHWFhr
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Artificial Intelligence, Robotics
Department	Department of Informatics, Bioengineering, Robotics and Systems Engineering
Short description of the department/laboratory/ research group	The TheEngineRoom group is a multi-disciplinary team currently affiliated with the Department of Informatics, Bioengineering, Robotics, and Systems Engineering of the University of Genoa. The team, founded in 2015 by Prof. Fulvio Mastrogiovanni, is aimed at fostering research in human-machine interaction, human-robot interaction, and human-robot collaboration. In doing so, the team exploits a wide range of expertise and know-how in Artificial Intelligence, machine learning, mechatronics, automatic control, and cognitive science. The team is characterised by a strong experimental attitude, encompassing the whole lifecycle of experimental activities, from idea development to hypothesis formulation to on-field validation. The team cooperates with major research groups worldwide, as well as with Italian and International companies. The team has at its disposal a wide range of facilities and equipment, including different robot platforms, as well as advanced sensing and measurement equipment.

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

Candidate fellows must send their candidature with a short description of their profile to the following email address	fulvio.mastrogiovanni@unige.it

Università di Genova
UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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Supervisor Expression of Interest

8.

First Name	Maurizio
Last Name	Valle
Orcid ID	0000-0002-7366-6060
Other information	https://rubrica.unige.it/personale/VUZDW15s
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Artificial-Intelligence (AI) Enabled Wearable haptics for assistive and rehabilitation devices
Department	Electrical, Electronics and Telecommunication Engineering and Naval Architecture Department (DITEN)
Short description of the department/laboratory/ research group	COSMIC (Connected Objects Smart Materials Integrated Circuits) lab develops its applied and basic research activities in heterogeneous fields such as biomedical applications, robotics, virtual/ augmented reality, intelligent environments (smart homes, smart cities, …), Internet of Things, environmental monitoring, e-inclusion, disability support. The main research topics encompass sensors, sensor systems and technologies, sensor networks, energy harvesting, circuits and integrated systems dedicated to specific applications, embedded implementation of Machine Learning methods and algorithms, multimedia systems for e-inclusion and disability support. In particular, the main research activities have been focused for more than ten years on the development of tactile sensor systems (electronic skin, e-skin) for the artificial reconstruction of the sense of touch. This research is extremely relevant for biomedical (eg prosthetics,

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Via Balbi 5, 16126 Genova
P. IVA 00754150100

	post-stroke rehabilitation), robotic and virtual/ augmented reality applications.
Candidate fellows must send their candidature with a short description of their profile to the following email address	maurizio.valle@unige.it

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100

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Supervisor Expression of Interest

9.

First Name	Gualtiero
Last Name	Volpe
Orcid ID	0000-0003-0760-4627
Other information	https://rubrica.unige.it/personale/UkNHWVls
MSCA domain	Information Science and Engineering (ENG)
Research focus area	Research concerns intelligent, affective, and social human-machine interaction. Activities address multimodal interactive systems, i.e., systems that are able to analyze the behavior of their users by capturing and processing data from different sensory channels (e.g., gesture, facial expression, and speech) and that can generate multisensory feedback (e.g., auditory and visual feedback). Research especially focuses on real-time automatic analysis of nonverbal affective and social behavior, with particular reference to full-body movement and to social signals in small groups of users. Applications are expected in the areas of education, cultural heritage, rehabilitation, and the performing arts.
Department	Department of Infomatics, Bioengineering, Robotics, and Systems Engineering - DIBRIS
Short description of the department/laboratory/research group	Casa Paganini - InfoMus (www.casapaganini.org) carries on scientific research and design, development, and experimentation of multimodal interactive systems. Research addresses computational methods for real-time analysis of nonverbal multimodal expressive and social interaction, with a particular focus on human movement, gesture, and sound (e.g., music and interactive sonification). Casa Paganini - InfoMus has

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	its premises in the monumental building of S. Maria delle Grazie La Nuova in the historical center of Genova. The building is endowed with a 230-seat auditorium. A 16-cameras Qualysis motion capture system is installed on the stage of the auditorium, providing an ecological environment for experiments. The motion capture system is integrated with other sensor systems (including professional video cameras, microphones, activity wearable sensors, and physiological sensors) in the EyesWeb platform and can be used for synchronized recordings of multimodal data. Moreover, the whole monumental building is endowed with a technological infrastructure, including fast network, audio and video connections. Multichannel audio devices, video projectors, and Augmented Reality devices are also available at the research center.
Candidate fellows must send their candidature with a short description of their profile to the following email address	gualtiero.volpe@unige.it

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UniGe.it

tel. +39 01020991
protocollo@pec.unige.it

Via Balbi 5, 16126 Genova
P. IVA 00754150100