Supervisor Expression of Interest
MSCA - Marie Sklodowska Curie Action - (PF) Postdoctoral Fellowship 2022

Supervisor name:	Prof. Alberto Redaelli
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Link *"Pagina docente":*	http://www.biomech.polimi.it/people-readelli
Department Name:	DEIB
Research topic:	Bioengineering & Healthcare
MSCA-PF Research Area Panels:	☐ CHE_Chemistry ☐ ECO_Economic Sciences ☐ **ENG_Information Science and Engineering** ☐ ENV_Environmental and Geosciences ☐ **LIF_Life Sciences** ☐ MAT_Mathematics ☐ PHY_Physics ☐ SOC_Social Sciences and Humanities
Politecnico di Milano Areas:	☐ Cultural Heritage ☐ Smart Cities ☐ Horizon Europe Missions ☐ **Health** ☐ Industry 4.0
Brief description of the Department and Research Group (including URL if applicable):	The DEIB was born officially at the Politecnico di Milano in 2013, from the merger of three previous departments: Bioingegneria, Elettronica e Informazione, and Elettrotecnica. Although the Dipartimento di Elettronica e Informazione (DEI) was officially established in 1992, its history dates back to the year 1928, when the Institute of Electrical Engineering was founded at the Politecnico di Milano. The Italian tradition in computer engineering started in 1954 right here, when Prof. Luigi Dadda brought from the U.S. one of the first CRC computers. The pioneering work in numerical computing and in the design of programming languages and hardware originated from these events. Since then, the Department has been recognized as a world-class scientific institution that contributes to key

achievements in computer engineering, telecommunications, industrial automation, electronics and microelectronics. Research in the field of bioengineering was started by Prof. Biondi, and led in 1991 to the creation of the Dipartimento di Bioingegneria, now again connected with DEI. The historic Dipartimento di Elettrotecnica, founded in 1886, has common roots with the DEI in the principles and theories of electromagnetism, at the base of electrical engineering, electronics, computer science and telecommunications. In the past few decades, the exponential growth of ICT has boosted an impressive expansion of DEIB's researchers and activities. Despite the variety of its interests, however, the Department has been able to preserve a unique scientific identity. Here cross-fertilization is a working reality, and our ICT researchers and specialists are eager to tackle extremely complex and diverse problems in many technical, economic, and social fields. Today our Department counts more than 240 faculty members and about 450 short-term researchers and PhD students. It is organized in six distinct scientific areas: Bioengineering, Computer Science and Engineering, Electrical Engineering, Electronics, Systems and Control, and Telecommunications. DEIB is also a key node of many research networks, and is a widely recognized gateway to a highly qualified know-how and expertise. DEIB's research environment is not bounded within its own walls, as it also includes the industrial consortium CEFRIEL and several spin-offs. With such initiatives, DEIB's activities end up involving nearly 1000 ICT professionals, which makes our Department able to deal with an ever-growing variety of intellectual challenges. DEIB's mission is to:

- Push the boundary of ICT development by fostering ground-breaking technological research, forging innovative ideas, and gaining international recognition;
- Educate young generations of engineers with a solid scientific background, a strong problem-solving mindset, and a truly multi-disciplinary approach.

Courses offered by our faculty cover the full spectrum of ICT within a rich variety of curricula. Undergraduate and graduate degree in Automation Engineering, Biomedical Engineering, Electrical Engineering, Electronic Engineering, Computer Engineering and Telecommunication Engineering, and doctoral programs in Information Technology and Bioengineering are open to national and international students.

https://www.deib.polimi.it

Title	Health Care and Personalized Medicine

Brief project description:
(max 1 page)

The topic of the project is the research in the field of health and personalized medicine and can encompass one or more areas among prevention (screening, big data, genomics), diagnosis (data, signal and image processing, diagnostic tools at the nano and micro scale), treatment (modeling in surgery, robotic assisted surgery and radiotherapy) and rehabilitation (wearable systems, cognitive rehabilitation, rehabilitation and assistive robotics, neuro-engineering, functional evaluation, prosthetics) of citizens.

This aim will be, according to the skills and inclination of the single candidate, actualized in the framework of one of the DEIB research lines, among which the following (but others are available on the DEIB website as well):

Analysis of biological systems and e-health

Biological and Biomechanical Engineering

Technologies for diagnosis, therapy and rehabilitation