

## Postdoc

Ecole/Institution/Société:

**ISTITUTO ITALIANO DI TECNOLOGIA, Italy / Venice**

Discipline:

**Robotic Engineering**

Type d'emploi::

**Full-time**

Date de publication:

**2022-03-13**

Personne à contacter:

**If you wish to apply for this position, please specify that you saw it on AKATECH.tech**

### **Postdoc in Soft Robotics Engineering**

#### **ABOUT US**

At IIT we work enthusiastically to develop human-centered Science and Technology to tackle some of the most pressing societal challenges of our times and transfer these technologies to the production system and society. Our Genoa headquarters are strictly interconnected with the other 11 centers around Italy and two outstations based in the US. We promote excellence in basic and applied research such as neuroscience and cognition, humanoid technologies and robotics, nanotechnology, materials for a truly multidisciplinary scientific experience.

#### **YOUR TEAM**

You will be working in a multi-disciplinary group, where researchers from a range of scientific and engineering backgrounds collaborate to create novel, advanced technologies taking inspiration from Nature. Specifically, the Bioinspired Soft Robotics laboratory (BSR, <https://bsr.iit.it/>) of the Fondazione Istituto Italiano di Tecnologia (IIT), led by Dr. Barbara Mazzolai, focuses on research and development of bioinspired, soft robotic technologies, for unstructured environment exploration and monitoring, principally in agriculture and industrial applications, taking inspiration from plants and soft-bodied animals.

The post is part of the EU-funded I-Wood (ERC) project (<https://cordis.europa.eu/project/id/101003304>), which investigates the plant-fungus interactions, i.e. the mycorrhizal network (MN), to recreate them by developing virtual models and physical robotic networks.

These systems will imitate plants' networks by employing robotic roots that grow and branch in response to the environment, exchange information and implement plant-inspired behaviors. Tested in a scaled-down mixed social network, they will interact with real plants to facilitate the development of mycorrhizae. I-Wood is pioneering a new paradigm in robotics and AI, and offers fresh knowledge on plant communities with major significance for biodiversity and climate protection.

In this context, we are looking for a postdoctoral researcher highly motivated and excited to focus on applications of mechanics, advanced materials, 3D printing and other additive manufacturing technologies to robotics.

The major objective of the research is to design and build a new generation of bio-robots capable to dig into the soil to monitor physical parameters and intervene to promote plant-fungus symbiosis establishment, imitating the mycorrhizal network communication strategies and plant explorative functionalities.

You will have the opportunity to explore and develop novel solutions for the integrated design of flexible, compliant hardware, with functional, soft materials having desirable mechanical properties, embedding sensing and power-efficient lightweight actuators, for enabling advanced, adaptation abilities in root-like soft robotic systems.

Bioinspired and soft robotics are promising fields of research offering an exciting, radically different approach to operate safely and reliably in harsh, unstructured environments.

Your main responsibilities will be the design and development of hardware components for the actuation of soft, bioinspired robots.

The position includes theoretical and hands-on research, collaboration with Postdocs, PhDs, and MSc students, and preparation of scientific publications. The candidate must be capable of collaborating with a large, international, and multidisciplinary team.

## **ESSENTIAL REQUIREMENTS**

- A Ph.D. in Soft Robotics, Mechanical engineering, Mechatronic engineering, Robotics, Manufacturing engineering, or a related field;
- experience and knowledge of 3D drawing design and related tools (Siemens NX, SolidWorks, or others);
- experience and knowledge of FDM, SLS, SLA and other 3D printing technologies;
- experience and knowledge of fast prototyping techniques (molding and casting, versa laser, CNC machining);
- experience and knowledge of fabrication of soft materials parts and components;
- analytical reasoning;
- strong problem solving attitude;
- strong communication and English language skills (written and spoken);
- teamwork;
- the ability to properly report, organize and publish research data;
- good command of spoken and written English.

## **ADDITIONAL SKILLS**

- Experience in the field of material science;
- basis knowledge of electronics and control;
- experience in bioinspired robotic systems;
- spirit of innovation and creativity;
- ability to work in a challenging and international environment;
- ability to work independently and collaboratively in a highly interdisciplinary environment.

## **COMPENSATION & BENEFITS**

- Competitive salary package for international standards (Salary can include bonus option depending on your role and contract)
- Private health care coverage (depending on your role and contract)
- Wide range of staff discounts
- Candidates from abroad or Italian citizens who permanently work abroad and meet specific requirements, may be entitled to a deduction from taxable income of up to 90% from 6 to 13 years.

## **WHAT'S IN FOR YOU?**

- An equal, inclusive and multicultural environment ready to welcome you with open arms. Discrimination is a big NO for us!
- We like contamination and encourage you to mingle and discover what other people are up to in our labs!
- If paperwork is not your piece of cake, we got you! There is a specialized team working to help you with that, especially during your relocation.
- If you are a startupper or a business-minded person, you will find some exceptionally gifted professionals ready to nurture and guide your attitude and aspirations.
- If you want your work to have a real impact, in IIT you will find an innovative and stimulating culture that drives our mission to contribute to the improvement and well-being of society!
- We stick to our values! Integrity, courage, societal responsibility, and inclusivity are the ones we believe in. They define us and our actions in our everyday life. They guide us to accomplish IIT mission.

## **Please submit your application using the online form and include**

- a complete CV with a full list of publications, plus a final section titled "Relevant skills" commenting on the strong points where your CV matches the required skills (list above);
- A research statement (up to 3 pages) describing your research goals and related plans in the next 2 years in the field of soft robotics;
- Attach up to 5 relevant papers, plus a final section titled "Personal contributions" detailing your specific contributions to each presented paper;
- name and contacts of 2 referees.

We inform you that the information you provide will be used solely for the purposes of evaluating and selecting professional profiles in order to meet the requirements of Istituto Italiano di Tecnologia.

Your data will be processed by Istituto Italiano di Tecnologia, based in Genoa, Via Morego 30, acting as Data Controller, in compliance with the rules on protection of personal data, including those related to data security.

Please also note that, pursuant to articles 15 et. seq. of European Regulation no. 679/2016 (General Data Protection Regulation), you may exercise your rights at any time by contacting the Data Protection Officer (phone Tel: +39 010 28961 - **email:** [dpo@iit.it](mailto:dpo@iit.it))

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