Sveučilište u Rijeci
University of Rijeka

Young Universities for the Future of Europe

# Hosting offer for Marie Sklodowska-Curie Postdoctoral Fellowships (PF) 2022 at University of Rijeka

MSCA Postdoctoral Fellowships are individual research grants offering excellent postdoctoral researchers the chance to develop their skills by means of international mobility. Through the implementation of an original and personalised research project, MSCA Postdoctoral Fellowships aim to foster excellence through training and mobility and to equip researchers with new skills and competences in order to identify solutions to current and future challenges.

University of Rijeka, Croatia/precision engineering research group invites motivated postdoctoral researchers to jointly prepare an application for the MSCA-PF-2022 call Marie Skłodowska-Curie Postdoctoral Fellowships call (MSCA-PF-2022) with them as host organisation.

**Description of Hosting organisation/group**

***Short description (preferably max. 0.5 page) of the host research group/host centre - strengths and scientific achievements and (if applicable) important infrastructure***

***Link to the webpage of the host group/host center***

*The Precision Engineering Laboratory (http://precenglab.riteh.uniri.hr/) research group of the Faculty of Engineering (RITEH - http://www.riteh.uniri.hr/en/) and the Centre for Micro- and Nano Sciences and Technologies (NANORI - https://nanori.uniri.hr/) of the University of Rijeka, Croatia (https://uniri.hr/en/home/), has a decades-long expertise in precision engineering, mechatronics and micro- and nanosystems' technologies. As part of the research in the field of mechatronics, our research group deals with advanced mechatronics devices used in active rehabilitation. In fact, one of the main research occupancies of our multidisciplinary research team is developing and building rehabilitation devices for patients who have suffered stroke, with several concepts already described and validated. Our research focuses (but it is not limited to) to the development of an active upper limb mechatronics rehabilitation device. The device should allow adapting the torques in its joints by using advanced sensing techniques, in order to exert minimum power which is needed for the patient to perform certain tasks. In this frame we use additive manufacturing (AM) technologies, where we combine materials with different mechanical properties to achieve the needed designs, either flexible or rigid. The process involves also developing sensing modules and building advanced control algorithms by using state-of-the-art machine learning and artificial intelligence algorithms to obtain data-driven mathematical models and controllers. In the development process we also use the capacities of the high-performance computing (HPC) facility "Bura" available at the University of Rijeka. In recent times we are orienting part of the research efforts towards applying the advantages of the soft robotics approach to obtain more ergonomic and comfortable designs. In these endeavours we collaborate with colleagues from the Department of Physical and Rehabilitation Medicine of the University of Rijeka, School of Medicine. The experimental part of the research is conducted both at the RITEH and NANORI laboratory premises where we have production grade AM equipment, different sensing and actuating devices as well as various control hardware and other equipment.*

**Your profile including Topics/expertise**

***Describe here in which research domains/topics you welcome postdoctoral candidates for an MSCA-PF application (preferably max. 0.5 page)***

*Postdoctoral candidates familiar with the mechatronics field in general, as well as robotic systems and machine learning techniques are welcome to apply. Upon joining our team, the MSCA postdoctoral candidate will be involved in an ongoing interdisciplinary project, i.e., the development of an active upper limb mechatronics robotic device used in active physical rehabilitation.*

***Preferably you can list one or more potential supervisors and (a short) reference to their expertise***

*Prof. Saša Zelenika - https://orcid.org/0000-0003-1536-0132*

*Assist. Prof. Ervin Kamenar - https://orcid.org/0000-0002-0921-5548*

- **Expected qualifications/expertise of the candidate:**
  The candidate should be qualified for laboratory work and have familiarity with CAD design and 3D printing techniques, programming languages (such as Python, Matlab and ROS) and control typologies.
    - **Please specify the required PhD degrees if applicable:**
      Mechanical Engineering, Mechatronics, Robotics or similar.
- You must have a completed PhD at the time of the call deadline (14 September 2022).
- Candidates must have a maximum of 8 years full-time research experience from the PhD award date until September 14, 2022. Periods of inactivity in research (e.g. unemployment, periods of employment outside research, parental or sick leave) do not count towards the time of research experience.
- For European fellowships, candidates can be of any nationality and must not have resided or carried out their main activity (work, studies, etc.) in Croatia for more than 12 months in the 36 months immediately before September 14, 2022.
- Highly motivated candidate with an excellent research track record appropriate to career stage, as evidenced by academic publications and other scientific output.

**What we offer**

- Support and guidance for the preparation of your MSCA PF proposal
- A stimulating, interdisciplinary environment for high-level research.

**How to apply?**

Indicate your interest by contacting the host institution as follows:

Please contact Assist. Prof. Ervin Kamenar (ekamenar@uniri.hr) (c.c. szelenika@uniri.hr, tea.dimnjasevic@uniri.hr) by email with a short CV and motivation to indicate your interest to prepare a MSCA-PF application with a supervisor /host group/…

After the supervisor agrees to support you as a MSCA-PF candidate, you can start preparation of MSCA PF project proposal and will be supported further by the Research Support Office of the host university.

For more information please contact the MSCA coordinator of the host institution: Tea Dimnjasevic, tea.dimnjasevic@uniri.hr