Marie Skłodowska Curie Action – Postdoctoral Fellowship 2024
Expression of interest – Hosting offer
(MSCA-PF-2024)

Contact Person/Scientist in charge *(data of the principal investigator of the research group/lab or scientific supervisor)* **Name**	İkilem
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Laboratory /Department /Institute /Centre / *(data of the centre/department where the fellow would be located* **Name**	Flexible Systems Laboratory
Address	Istanbul Technical University Gumussuyu Campus 34437 No:65 Gumussuyu Beyoglu Istanbul TURKEY
Research Area *(Please select the research area: corresponding to the eight MSCA evaluation panels. You can select between one and up to three scientific areas per EOI)*	Social Sciences and Humanities (SOC) Economic Sciences (ECO) **Information Science and Engineering (ENG)** Environment and Geoscience (ENV) Life Sciences (LIF) Mathematics (MAT) Physics (PHY) Chemistry (CHE)
Brief description of the Centre/Research Group *(max. 1,600 characters including spaces: information about the research centre or research group, scientific staff. Please include URL if possible)*	Flexible Systems Laboratory was established in 2019 at Istanbul Technical University Mechanical Engineering Faculty in Gümüşsuyu Campus. The main focus of the lab is to develop solutions for smart, flexible, and soft robotic systems as well as polymeric materials for biomedical applications. We focus on design, development, characterization and application of embedded and wearable sensors in various fields particularly medical applications; fabrication of flexible, foldable and stretchable structures; manufacturing of tissue scaffolds and wound dressings; motion control of robotic systems; 3D printing, and modeling of flexible structures. **Field of Work:** Development of soft and flexible robotic systems; Foldable, origami-based mechanism design; Mechatronic system design and integration; Polymeric and textile-based wearable sensor design, development and characterization; Polymeric tissue scaffold and wound dressing design and development; 3D Printing technologies; Flexible (compliant) mechanism modeling; Machine learning applications; Control applications
Project description *(max. 1,800 characters including spaces: short description of the research project / research line where the fellow would be hosted and develop his /her project)*	In wearable robotic systems, for example, in rehabilitation robotic systems used for people with damaged motor functions and orthopedic problems, strain sensors and tactile sensors that measure joint angles are needed. In addition, in soft robotic systems, for example, strain sensors and haptic interfaces that can be integrated into the joints of origami-based, foldable mechanisms manufactured with the 2-dimensional layer- by-layer production method, thus enabling the position tracking of the mechanisms, or if they are used in minimally invasive applications tactile sensors are also needed. The new researcher will be welcome to work on developing flexible, adaptable, soft strain sensors and tactile sensors that can be employed in wearable robotic systems and soft robotic systems by focusing on two different production methods. First, for the development of wearable sensors, conductive metal yarns will be integrated into the fabric structure and functional fabric constructions will be produced with knitting techniques. Secondly, sensors will be produced with conductive

	filaments using FDM three-dimensional printing methods that can print multiple materials simultaneously. Parameter optimization, signal processing, interpretation and calibration of the produced sensors will be provided. Their usability in recommended applications will also be tested.
Applications: documents to be submitted and deadlines *(Please indicate the documents that the candidate fellow should submit to establish contact: CV, letter of motivation, letter of references, etc., please indicate deadline. Recommended deadline: April 2023)*	Interested research scholars are asked to send their CVs, letters of motivation, letters of references and their research plans to show how they can contribute to the project topic described above. Deadline: June 30th 2024.