

Marie Skłodowska Curie Action –Postdoctoral Fellowship 2022
(MSCA-PF-2022)

Contact Person/Scientist in charge <i>(datos del IP del grupo de investigación o responsable científico)</i>	Name	Cecilia
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Department /Institute /Centre <i>(datos del centro/departamento donde estaría ubicado el investigador a contratar)</i>	Name	Escuela Tecnica Superior de Ingeniería y Diseño Industrial. Centre for Automation and Robotics
	Address	c/Ronda de Valencia, 3
	Province	Madrid
Research Area <i>(en base a las 8 áreas científicas establecidas en MSCA. Se podrán seleccionar entre una y tres áreas científicas por EOI)</i>		Information Science and Engineering (ENG) Life Sciences (LIF)
Brief description of the Centre/Research Group <i>(Max. 1600 caracteres con espacio: información sobre el centro / grupo de investigación / personal científico, destacando los aspectos más relevantes de los mismos. Incluir URL si es posible.)</i>		<p>The Centre for Automation and Robotics (CAR) CSIC-UPM is a Joint Centre for Shared Ownership between the UPM and CSIC. The main objective is to develop research in Control Engineering, Artificial Perception, and Robotics that will mainly be applied in providing useful results to Society. CAR UPM-CSIC is uniquely well-positioned in leading this ambitious work program, placing the study in the areas of Automation at its highest level. Moreover, it has excellent conceptual and instrumental potential based on the experience of researchers and its facilities. CAR is involved in numerous projects and programs of the European Commission (H2020, FP7, and FP6), the Spanish National Plan, the CCAA programs, and a great number of collaborations with companies.</p> <p>In CAR CSIC-UPM, research is done in a comprehensive and multidisciplinary approach, thus contributing to the advancement of knowledge for solving specific problems arising from different areas of the industry. The research activities are strategically interwoven with a very high quality of teaching that includes UPM postgraduate program in Automation and Robotics, both master and doctorate.</p>
Project description <i>(Max. 1800 caracteres con espacio: breve descripción sobre el proyecto /línea de investigación en el que se acogería al investigador/a Marie S.Curie.)</i>		<p>Modular platform for integrating Digital (bio)markers to improve the early diagnosis of neurodegenerative diseases.</p> <p>Nowadays, digital measures can make visible what is currently clinically invisible. The early diagnosis is an important step towards accelerating the development of new therapies for diseases such as Alzheimer's disease, Parkinson's disease, or Multiple Sclerosis.</p> <p>The neuropsychological assessment tools are not enough to provide information about behavioral and cognitive aspects at the early stages of these diseases.</p> <p>Digital (bio)markers arise as powerful, non-invasive, and cost-effective tools to provide information for the early diagnosis of neurological disorders.</p> <p>The main objective of this research is to measure in real-time biological signals and the behavioral aspect of patients. We will use machine-learning tools to provide a novel “digital scale” to assess the cognitive decline of diagnosed patients with neurological disease or those who have not been diagnosed yet.</p>



Expression of Interest – UPM Supervisor

	<p>Some biological signals to be measured and integrated are gait analysis using wearable and wireless inertial sensors, eye movements using a wearable gaze tracker, sleep patterns by actigraphy and portable EEG, and EMG signals. In addition, we will add the behavioral aspect to the evaluation of cognitive state by including the metric given by serious games, such as attention capabilities, success rates, and velocity in the movements, among others.</p> <p>We will validate the obtained information in a clinical setting. For this purpose, we will collaborate with Fundacion CIEN and the Neurology Service of University Hospital “12 de Octubre”. Both institutions are involved in the proposal, and patients will be recruited according to the medical protocol.</p>
Applications: documents to be submitted and deadlines	Curriculum vitae. Motivation Letter. Deadline: 9th May 2022