

Expression of Interest-UPM Supervisor

Marie Skłodowska Curie Action–Postdoctoral Fellowship 2026 (MSCA-PF-2026)

Supervisor Name	María J. Ledesma Carbayo
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Department /Institute / Centre Name/Location	Biomedical Image Technologies, Department of Electronic Engineering. ETSI Telecomunicación and Center for Information Processing and Telecommunications
Research Area	Information Science and Engineering (ENG) Mathematics (MAT) Physics (PHY)
Research team/group	<p>Biomedical Image Technology (BIT-UPM) is a research group of the Universidad Politecnica de Madrid and CIBERBBN whose main objective is the research of new technological solutions to real clinical or biological problems, especially with the aim of optimizing diagnosis and treatment. The group has experience in advanced biomedical image processing for segmentation, alignment, feature extraction and automatic calculation of biomarkers using image processing and artificial intelligence techniques. These techniques have been developed in different projects related to cardiopulmonary imaging, cancer imaging and microscopy by processing information from medical images (CT, MR) and histopathological images and integrating them with clinical data through new artificial intelligence developments. The group has a strong network of industrial, technical and clinical collaborators at an international level. Vision: Contributing to improve health care delivery through advances in biomedical imaging technologies in developed as well as in low resourced settings. Mission: Researching on new technological solutions to actual clinical or biological problems, especially with the aim of early diagnosis and treatment monitoring, including:</p> <ul style="list-style-type: none"> . Research on the development of new biomedical image acquisition, processing and analysis techniques. . Teaching and training of doctorate, master and graduate students. . Cooperation with hospitals and research centers so that they use our techniques and tools.
Keywords	Biomedical image processing, multimodal AI, generative AI, advanced therapies, lung cancer, breast cancer, brain tumors, cardiovascular diseases and respiratory diseases
Research Focus	<p>Multimodal Artificial intelligence for treatment decision making</p> <p>The main goal of the project is to design a spatio-temporal deep-learning integrative framework that combines imaging data at microscopic and macroscopic levels with clinical and laboratory information to predict prognosis and therapy response for different diseases with current innovative treatments including lung cancer, lung fibrosis and cardiac fibrotic remodeling. Pre-treatment histology and early treatment imaging data will support midterm response prediction, while multimodal histopathological stains will characterize the histopathological clues of the disease. Chest CT, MRI, and other imaging modalities will be integrated across different scales to enhance predictive modeling. By correlating microscopic features with clinical and laboratory data, we aim to improve monitoring and uncover new insights in precision medicine. Access to comprehensive multimodal databases will enable</p>

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	<p>AI-driven advancements in deep radiomics, pathomics, and multimodal artificial intelligence, optimizing therapy assessment and reducing unnecessary treatments, with potential applications in oncology, pulmonary and cardiac diseases.</p> <p>The disease focus of the project could be selected with the potential candidates.</p>
Applications: documents to be submitted and deadlines	<p>CV by 30th of April to the supervisor</p> <p>Academic record including marks and distinctions.</p> <p>Contact details for two references</p>