Expression of Interest – UPM Supervisor

Marie Skłodowska Curie Action –Postdoctoral Fellowship 2024
(MSCA-PF-2024)

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Department /Institute /Centre Name	Grupo de Tratamiento de Imágenes Departamento de Señales, Sistemas y Radiocomunicaciones ETS Ingenieros de Telecomunicación
Address	ETS Ingenieros de Telecomunicación Avda. Complutense 30 28040 – Madrid (Spain)
Province	Madrid
Research Area	Information Science and Engineering (ENG)
Brief description of the Centre/Research Group	The Grupo de Tratamiento de Imágenes (GTI) [Image Processing Group] is a research group working on theory, methods, and applications of Digital Image and Video Processing, mainly for compression and analysis. GTI covers the complete end-to-end processing pipeline: acquisition, calibration, representation (encoding), compression, transmission, rendering, quality evaluation, … The expertise is applied on planar, stereo, multi-view, 360VR, and 3D video, on point clouds and 3D models, natural and synthetic information, … Currently, GTI activity focuses on immersive video communications and extended (VR, MR, AR) and shared reality applications, including deep-learning for visual computing. GTI infrastructure includes three labs: an immersive laboratory (ImLab) for 360VR, volumetric video and extended/shared reality (Government grant - 750k€ - for a reference lab in XR communications over 5G), a real-time free-viewpoint video laboratory (FVV Live) endowed with linear and planar camera configurations, lightweight schemes for video acquisition, transmission, and rendering, and minimal motion to photon latency, and a complete 3DTV laboratory (3DTV Lab) endowed with a 3D acquisition system, a 3D post-production system, and several 3D displays (stereoscopic, auto-stereoscopic, and holographic). Website: https://www.gti.ssr.upm.es
Project description	Extended Reality (XR) technologies provide to the user novel ways to explore the represented scenes and new interaction possibilities with the environment and its elements. These new factors have shown potential in improving personal communication technologies, but also in other application areas, such as audiovisual content-delivery and broadcasting, (on-line) gaming, education, and health. In addition, communication and content-delivery networks have also evolved in parallel, bringing into play new standards and networks such as 5G, which are expected to disrupt the way we communicate at a distance or consume audiovisual content. Within this framework, our research activities focus on the development and evaluation of immersive communication systems, which can provide real-time social XR applications. In this sense, the researcher may work on one or various of the following aspects: 1) to develop technological frameworks to advance in immersive

	communications, addressing the gap that is currently preventing the use of immersive technology as a common and social communication mean (e.g., techniques for compression, synthesis, rendering, etc. of XR media), and 2) to analyze the novel factors that influence the user experience and the interaction of the users with XR technologies, using appropriate subjective evaluation methodologies (including questionnaires and psychophysiological signals) and developing models to estimate different aspects of the user experience.
Applications: documents to be submitted and deadlines	CV, letter of motivation and 3 references. Deadline: 30 April 2024