Expression of Interest – UPM Supervisor

Marie Skłodowska Curie Action –Postdoctoral Fellowship 2025
(MSCA-PF-2025)

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Department /Institute /Centre	**Name**	Signals, Systems and Radiocommunications
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	Province	Madrid
Research Area		Information Science and Engineering (ENG) Mathematics (MAT)
Brief description of the Centre/Research Group		The ByO research group has 25 years of experience, which is shown through numerous publications in high impact scientific journals, participation in international fora and the involvement in different research projects at national and international level to be a world leader in the research and development of automatic systems for the screening of pathologies using biometrics, signal processing and artificial intelligence. The group has a large background in applications such as ECG, PCG, medical image processing, accessibility for disabled people, voice and speech processing, and eye movements processing. The impact of the research group is demonstrated in view of the large number of citations of the PI (h-index of 40). Currently the group is formed by three full professors, two associate professors, one postdoc, and four predoctoral students. See http://www.byo.upm.es for more details.
Project description		To date, there are **no known early, reliable and non-invasive markers of Parkinson's disease**, and neuropathological diagnosis is still the gold standard for its confirmation. In this regard, literature has identified that certain motor and non-motor biometric traits are affected even in presymptomatic stages. However, they have not been widely used for the design of automated systems to support diagnosis and evaluation. Other biometrics are yet to be discovered. The project aims to **develop new motor biomarkers** based on oculography for the design of automatic systems for **screening, differential detection, evaluation and prediction of the Parkinson's disease**, using techniques based on digital signal processing and artificial intelligence. To do this, a multimodal and multiscale analysis will be carried out, placing **emphasis on a novel non-invasive and non-contact approach based on the processing of oculographic sequences**. The proposed approach supposes a radical change in the technological paradigm used in the evaluation of the disease.
Applications: documents to be submitted and deadlines		CV Letter of motivation References Deadline: 30th April 2025