

Expression of Interest – UPM Supervisor

**Marie Skłodowska Curie Action – Individual Fellowship 2023
(MSCA-IF-2023)**

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Research Area	<input checked="" type="checkbox"/> Social Sciences and Humanities (SOC) <input type="checkbox"/> Economic Sciences (ECO) <input checked="" type="checkbox"/> Information Science and Engineering (ENG) <input type="checkbox"/> Environmental Sciences and Geology (ENV)	<input type="checkbox"/> Life Sciences (LIF) <input checked="" type="checkbox"/> Mathematics (MAT) <input checked="" type="checkbox"/> Physics (PHY) <input type="checkbox"/> Chemistry (CHE)	
Brief description of the Centre/Research Group	<p>The Grupo de Sistemas Complejos (GSC) is an interdisciplinary research group in Complex Systems formed by experienced Professors, and young postdocs and Ph. D. students of several schools of the Universidad Politécnica de Madrid, which creates an exciting environment and an enthusiastic atmosphere, always open to new ideas.</p> <p>The GSC has a long experience in the study of (classical and quantum) chaos, Complex Systems and nonlinear Dynamics in a several different fields ranging from fundamental Science (Mathematics, Physics and Chemistry), to Sociology. More recently, a new research line on Complexity has been implemented in order to study Complex Networks and Big Data using the latest methodologies (Optimization Algorithms, Machine Learning, Deep Learning...).</p> <p>So far, the members of the group have published over 200 articles in journals indexed in the JCR, such as Sci. Reports, Phys. Rev. Lett., Phys. Rev. E, PCCP and Chaos, among others. Our research is financed by different public institutions (European Comission, The Spanish Ministry of Science, Innovation and Universities, UPM...) and private companies, and is developed in collaboration with different Spanish (Universidad Autónoma de Madrid, Instituto de Ciencias Matemáticas, ...) and foreing (Johns-Hopkins University, Loughborough University, Humboldt-Universität zu Berlin...) institutions.</p> <p>For further information, visit our webpage at: www.gsc.upm.es</p>		

<p>Project description</p>	<p>The work of the research group in the field of Complex Networks and Data Science is focused on studying social dynamics by analyzing large datasets adopting an interdisciplinary approach. We build networks of interactions between humans and analyze their topology and the dynamics that take place in those systems from the perspective of Network Science, but we also adopt complementary tools from fields like statistical analysis or signal processing. This holistic approach allows us to gain a wider insight of the social systems under study.</p> <p>Our main topics of interest are the study of social polarization and segregation in complex networks, processes of information diffusion and the development and characterization of network metrics. We also work in semantic and sentiment analysis of text samples.</p> <p>The research line that the researcher would join is the study of processes of information diffusion in networks. The project consists in studying dynamical phenomena like long range temporal correlations that emerge from the interaction of users in a social network. In order to do that, we will collect and analyze empirical data from online social media. Then, mathematical models of information diffusion on networks will be developed in order to reproduce the empirical results.</p> <p>Expertise in data science, networks science and computational models will be highly appreciated.</p>
<p>Applications: documents to be submitted and deadlines</p>	<p>The applicant should submit (as soon as possible, and no later than April 30th 2023) the following documents:</p> <ul style="list-style-type: none"> - Letter of motivation - Curriculum vitae - Two reference letters - A brief summary of up to three of the most important articles or patents,