

**HORIZON EUROPE Research and Innovation Framework Programme
MARIE SKŁODOWSKA-CURIE ACTIONS**

**EXPRESSION OF INTEREST
Postdoctoral Fellowships (PF)
HORIZON-MSCA-2021-PF-01**

Organisation Name/ Department <i>(if applicable)</i>	UMNAI Ltd.	
Website of the organisation <i>(in English)</i>	https://umnai.com/	
Organisation Short Name	UMNAI	
Organisation Type	<input type="checkbox"/> Academic <input checked="" type="checkbox"/> Non-academic	<input type="checkbox"/> Higher Education establishment <input type="checkbox"/> Research organisation <input type="checkbox"/> International European Research Organisation <input checked="" type="checkbox"/> SME <input type="checkbox"/> Other (please specify)
Research Fields	<input type="checkbox"/> Chemistry (CHE) <input 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"/> Environment and Geosciences (ENV) <input type="checkbox"/> Life Sciences (LIF) <input checked="" type="checkbox"/> Mathematics (MAT) <input type="checkbox"/> Physics (PHY)	
Sub-Fields/ Keywords <i>(up to 5)</i>	Explainable Artificial Intelligence (XAI), Artificial Intelligence (AI), Machine Learning, Discrete Mathematics, Homomorphic Computing	
Marie Skłodowska-Curie Action(s) of interest	<input checked="" type="checkbox"/> European Postdoctoral Fellowships <input type="checkbox"/> Global Postdoctoral Fellowships	
Short Description of the Organisation/ Department - strengths and scientific achievements (publications, patents, etc.), important infrastructure <i>(up to 2000 characters with spaces)</i>	Based in Malta and founded in 2019, UMNAI is an SME that is transforming the way AI is conceived, valued and consumed. Our team of established experts have developed a ground-breaking technology in the field of eXplainable AI (XAI), that resolves the well-known ‘black-box’ problem pervasive to current advanced AI models by converting them into logically and functionally equivalent ‘white-box’ models that are fully explainable and actionable, and that provide explanations together	

	<p>with predictions in real-time. The ramifications of this technology are wide-reaching and will affect practically all applications that currently use AI, as well as opening the door to new applications and uses of AI. We have over 20 patents pending, covering our technology and its application. Having successfully invented, implemented and validated the foundational technology, there remains a significant amount of fundamental research to be done in many areas and topics.</p> <p>Publicly Viewable Patents:</p> <p>[1] Dalli A, Pirrone M, 2021, Architecture for an Explainable Neural Network, US 11055656</p> <p>[2] Dalli A, Pirrone M, 2021, Model induction method for explainable A.I., US 11049043</p>
<p>Link to the short country profile in case of Widening countries</p>	<p>Malta Widening Country Profile</p>
<p>Previous Projects/ Research Experience (international/ EU/ big national or regional projects especially in the areas in which you would like to host fellows) (<i>up to 5</i>)</p>	<p>ERDF: Crowd Dynamics aims to create new components for the creation of a new set of processes for the analysis of crowds and their behavior using advanced image processing techniques.</p> <p>ERDF: MAPGRAPH aims to generate new processes in the area of Massively Parallel GPU Based Pattern and Graph Structure Data Analysis.</p> <p>ERDF: IDITES (Intelligent Digital Traffic Enforcement System) aims to generate new processes in the area of vehicle analysis and automated intelligent image analysis systems.</p> <p>FP6: COMPANIONS: persistent multi-modal interfaces to the Internet. The COMPANIONS project has developed virtual Companions for conversation to change the way people think about the relationships of people to computers and the Internet.</p> <p>FP5: Flexible and Adaptive Spoken Language and Multi-Modal Interfaces: a robust and scalable Virtual Personal Assistant within the domain of conversational interaction, incorporating multi-modal input and output in a mobile device with access to an agenda, email and contacts and the potential for rapid integration of other Internet content.</p>
<p>Thematic areas and list of supervisors who are looking forward to preparing a project proposal with postdoctoral researchers</p>	<p>Thematic areas:</p> <ol style="list-style-type: none"> 1. Wide Neural Nets as Universal Estimators for Explainable AI Architectures: Exploring the WNN architecture of eXplainable Neural Nets 2. Bias Detection, Identification and Mitigation Methods for Explainable AI Architectures 3. Privacy-Preserving Techniques for Explainable AI models: Addressing the right-to-be-forgotten and GDPR Compliance in Machine Learning 4. Homomorphic Computing in Explainable Neural

	<p>Networks</p> <p>5. We are open to any relevant proposals you may have</p>
Contact Person/ Position in the Organisation/ Phone/ E-mail	For further info please contact: Andrew Farrugia andrew.farrugia@umnai.com
Deadline for Expressions of Interest from postdoctoral researchers	Call deadline is 12 Oct 2021, candidates should allow for sufficient time to develop and submit a proposal before this date
Necessary documents	<ul style="list-style-type: none"> ✓ CV ✓ Topics of interest and relevant experience
What we offer	<ul style="list-style-type: none"> ✓ Full-time contract to work on a research project and enjoy advanced training, ✓ Competitive salary – €4,475.48 gross amount, including compulsory deductions under national law, such as employer and employee social security contributions and direct taxes; ✓ Mobility (€ 600) and Family allowances (if applicable - € 660); ✓ Budget for Research, Training and Networking costs (€ 1 000); ✓ Special needs allowance (if applicable).
Requirements	<ul style="list-style-type: none"> ✓ Experience: <ul style="list-style-type: none"> - Applicants should be in a possession of a doctoral degree at the call deadline. - At the call deadline, supported researchers must have a maximum of 8 years full-time equivalent experience in research, measured from the date of award of the doctoral degree. Years of experience outside research and career breaks (e.g. due to parental leave) will not count towards the amount of research experience. For nationals or long-term residents of EU Member States or Horizon Europe Associated Countries who wish to reintegrate to pursue their research career in EU Member States or Horizon Europe Associated Countries, years of experience in research in third countries will not be considered in the above maximum. ✓ Mobility rule: <ul style="list-style-type: none"> - European Postdoctoral Fellowships - applicants must not have resided or carried out their main activity (work, studies, etc.) in the country of the beneficiary for more than 12 months in the 36 months immediately before the call deadline.

<p><u>IMPORTANT – apply with us and increase your chances for success¹:</u></p>	<p>✓ Not funded applications for European Postdoctoral Fellowships with a host organisation from Malta have the chance to be funded under the ERA Fellowships Call (‘Widening Participation and Strengthening the European Research Area’ part of the Framework Programme). They will be automatically transferred to the ERA Fellowships Call and will be ranked in one single list according to the scores and evaluation of the Postdoctoral Fellowships call with an additional budget of € 8 million for each 2021 and 2022.</p>
	<p>✓ Information on national/ regional/ institutional Seal of Excellence Programme </p>
	<p>✓ European Commission website for Seal of Excellence Programmes: https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/seal-excellence/funding-opportunities-under-msca_en</p>

¹ The first bullet is only for Widening countries, the second bullet is only for countries and/ or organisations that have a Seal of Excellence programme adopted. Delete accordingly.