EUROPEAN COMMISSION

JOINT RESEARCH CENTRE

2021-IPR-A5001-FGIV-019110

FG IV Scientist - Exploratory Research Project Physics-Informed Neural Networks for Foresight on LOsses and Energy Demand of Buildings (PINN FLOED)

POSITION FOR:
Member of the contract staff IV – art. 3b of the Conditions of Employment of Other Servants
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1962R0031:20110101:EN:PDF

WE ARE:
As the science and knowledge service of the Commission, the mission of DG Joint Research Centre (JRC) is to support EU policies with independent evidence throughout the whole policy cycle.

The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain). Further information is available at https://ec.europa.eu/jrc/

The JRC offers a vacancy for a Contract Agent within the Exploratory Research Project Physics-Informed Neural Networks for Foresight on LOsses and Energy Demand of Buildings (PINN FLOED). The JRC Exploratory Research Programme (ER) is a strategic initiative characterised by ideas that might lead to novel results and qualitatively enrich current JRC scientific work.

The vacancy is within the Directorate for Space, Security and Migration. The directorate supports the relevant policy DGs with independent, technical and scientific evidence in the areas of on emergency preparedness, response, disaster risk management and resilience in cases of natural and manmade hazards. The operational scientific research will take place in the Safety and Security of Buildings Unit, within a team of experimentalists and numerical modellers who provide reference results relevant to the European standardization in the building and construction sectors. Further information is available at https://ec.europa.eu/jrc/en/research-facility/elsa

The unit A.5 Scientific Development is in charge of the overall JRC Exploratory Research Programme.

WE PROPOSE:
A position to carry out scientific tasks in accordance with the Exploratory Research Project Physics-Informed Neural Networks for Foresight on LOsses and Energy Demand of Buildings (PINN FLOED). The European building stock is aging and requires significant renovation efforts to improve its energy performance and ensure structural safety and resilience. Within the European Green Deal, the Renovation Wave promotes large increases in building renovation rates to ensure that the ambitious EU climate-neutrality targets for 2050 can be achieved. To inform policy-making processes, models that are applicable at large-scale, yet adequately consider building physics parameters, are needed. PINN FLOED aims to harness the potential of data-driven machine learning approaches to carry out foresight studies on the effect of integrated (seismic and energy) building renovation in Europe.

The successful candidate will:

- Develop and validate a physics-informed machine learning approach for assessing the energy consumption of the existing EU building stock and the impact of building renovation;
- Actively collaborate with other scientists at the JRC to establish different scenarios on future energy-carrier mix and climate change to investigate their impact on future building energy consumption;
- Carry out foresight studies to assess the impact of different energy and renovation policy scenarios, in light of climate change, and investigate priority regions and building types;
- Investigate the impact of holistic renovation strategies by including the seismic performance of buildings in seismic regions of Europe;
- Contribute to Project management;
- Analyse and treat of analytical results and complex data;

- Provide regular and accurate reports on scientific activities every twelve months and a final report;
- Report to the Project Leader on progress, achievements and potential problems in a timely manner;
- Provide feedback and maintain interactive communication with colleagues;
- Explain the research activities and achievements to third parties, such as scientific communities and the general public;
- Write, publish and present scientific reports, articles and conference papers;
- Propose new activities, including competitive activities, where relevant.

WE LOOK FOR:

A scientist with the following qualifications:

- A doctoral diploma in civil/structural engineering, earthquake engineering or related field, alternatively completed university studies of at least three years attested by a diploma and at least five years professional experience in a field relevant to the position;
- Previous research or professional experience relevant to the topic of the call (i.e. seismic and/or energy retrofitting of existing buildings) is essential;
- Knowledge of scientific programming (e.g. matlab) or data-driven machine learning approaches is an advantage;
- Solid record of research activities relevant for the post including publications in international peer-reviewed journals is an advantage;
- Good oral and written communication skills in English (B2) are essential, knowledge of other languages is an advantage.

In addition, the following competences will be considered as an advantage:

- Ability to work in a team and in a multi-cultural environment;
- The candidate is expected to be creative and work independently.

INDICATIVE CONTRACT DURATION:

24 months employment contract for the Exploratory Research project Physics-Informed Neural Networks for Foresight on LOsses and Energy Demand of Buildings (PINN FLOED)

Employment contracts for Contract Agents can be renewed for maximum 6 years.

PLACE OF WORK:

Ispra (IT)

ELIGIBILITY CRITERIA:

Candidates for this contract agent position shall:
– (i) have passed a valid EPSO CAST selection procedure;
or
– (ii) be registered in the EPSO Permanent CAST https://epso.europa.eu/documents/2240_en
or
- (iii) be registered in the specialised call for researchers https://ec.europa.eu/jrc/en/working-with-us/jobs/vacancies/function-group-iv-researchers (used mainly by the JRC).

With a valid application number to one of the above, you may then apply for this specific vacancy at JRC through: http://recruitment.jrc.ec.europa.eu/?type=AX

RECRUITMENT POLICY:

The JRC
• Cultivates a workplace based on respect for other people and the environment.

- • Embraces non-discriminatory practices and equality of opportunity. In case of equal merit, preference will be given to the gender in minority.