Job Title: Internal Research Fellow (PostDoc) for Earth Observation Innovative Digital Technologies

Requisition ID **11020** - Posted **16/12/2020**

EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of EO Programmes.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. Applications from women are encouraged.

Post
Internal Research Fellow (PostDoc) for Earth Observation Innovative Digital Technologies
This post is classified F2.

Location
ESRIN, Frascati, Italy

Our team and mission
You will be based at the Φ-lab at ESRIN, whose mission is to speed up development in Earth observation (EO), by helping ESA and European industry and start-up and research communities to rapidly adopt transformative technologies. You will be part of a multi-disciplinary team of researchers and data scientists passionate about innovation, and will work in an inspiring, collaborative open-space environment.

Φ-lab is currently focused on innovative Artificial Intelligence (AI) and Quantum Computing (QC) activities which have promise in terms of delivering visible impact on the Earth observation sector.

You can find more information about Φ-lab and research and innovation here
: https://esamultimedia.esa.int/docs/EarthObservation/phi_lab_explore_research_innovation_2020.pdf

Interested candidates are encouraged to visit the ESA website: www.esa.int

Field(s) of activities/research/learning areas
You will carry out applied research in Artificial Intelligence (AI) and/or Quantum Computing with particular emphasis on developing new methods applicable to Earth observation. Your specific area of research will be chosen partly by you, based on your expertise, and partly by the Φ-lab team so as to follow the Agency's strategic directions. In addition to your main research activity, you will have the possibility to contribute to the general activities of the Φ-lab related to events, support procurement activities involving industry and research centres, and in general support Φ-lab activities in the community related to your expertise.

In particular, you will:

- perform the agreed applied research, contributing to the Φ-lab current AI4EO and QC4EO use cases (e.g. multi-sensor data fusion, edge computing, automatic change detection, transfer learning, mining of hyperspectral data, data mining, quantum machine learning);
- support the team in rapidly prototyping and evaluating solutions for application to EO data sets and challenges, particularly those relevant to ESA EO missions;
- adapt existing algorithms and tools to take account of the specific characteristics of EO data sets and physical measurement principles, and apply them to EO data applications;
- prepare, validate and maintain large-scale, training data sets, to be used for development and evaluation of AI algorithms by international research and industrial communities;
- contribute to the development of an interactive environment for rapid prototyping and testing of new ideas;
- organise and lead AI4EO or QC4EO challenges on proposed topics;
- collaborate with academia and industrial partners on transferring research results to applications;
- publish in peer-reviewed top-ranked literature;
- promote/share your results and tools through new digital tools, including social media and Jupyter Notebook; perform and participate in assessments on subjects of strategic interest to ESA.

Technical competencies

Breadth of exposure coming from past and/or current research/activities
Knowledge relevant to the field of research
Research/publication record
Ability to conduct research autonomously
General interest in space and space research

Behavioural competencies

Innovation & Creativity
Continuous Learning
Communication
Relationship Management
Self Motivation
Problem Solving
Cross-Cultural Sensitivity
Teamwork

Education
You should have obtained:

- A degree in AI, computer science, mathematics or a relevant engineering discipline, and
- A PhD (completed before take-up of duties) with the subject of your thesis relevant to the description of the tasks outlined above.

Additional requirements
You should also have:

- Proven interest in AI, EO, QC and New Space
- An adequate network within the reference community
- Proven experience of leading research with international recognition
- Experience with one or more general purpose programming languages e.g. Python, and with general purpose deep learning frameworks e.g. Tensorflow, PyTorch

Soft skills

- Natural curiosity and a passion for new subjects and research areas, including AI, EO, and New Space The ability to gather and share relevant information
- The ability to think outside the box and explore new avenues, with natural curiosity and a passion for new subjects and research areas
- The ability to focus on applied research delivering tangible short-term results
- An entrepreneur mindset.

The working languages of the Agency are English and French. A good knowledge of one of these is required. Knowledge of another Member State language would be an asset.

Other information
For behavioural competencies expected from ESA staff in general, please refer to the ESA Competency Framework.

The Agency may require applicants to undergo selection tests.

The closing date for applications is 31 January 2021.

In addition to your CV and your motivation letter, please add your proposal of no more than 5 pages outlining your proposed research in the "additional documents" field of the "application information" section.

If you require support with your application due to a disability, please email contact.human.resources@esa.int.

Please note that applications are only considered from nationals of one of the following States: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the United Kingdom. Nationals from Latvia and Slovenia, as Associate Member States, or

Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Lithuania and Slovakia as European Cooperating States (ECS).
Priority will first be given to candidates from under-represented Member States.

In accordance with the European Space Agency's security procedures and as part of the selection process, successful candidates will be required to undergo basic screening before appointment