

# Job Title: Internal Research Fellow (PostDoc) in Artificial Intelligence for Earth Observation

Req ID 8827 - Posted 14/08/2020

## EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of Earth Observation 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) in Artificial Intelligence for Earth Observation

This post is classified F2.

### Location

ESRIN, Frascati, Italy

### Our Team and Mission

You will be based in the  $\Phi$ -lab in ESRIN, whose mission is to accelerate the future of Earth Observation (EO), by helping ESA and the European industry, startup and research communities to rapidly adopt disruptive technologies. You will be part of a multi-disciplinary team of researchers and data scientists passionate about innovation, and work within an inspiring and collaborative open-space environment.

Interested candidates are highly encouraged to visit the ESA website: [www.esa.int](http://www.esa.int)

### Fields of research and activities

You will carry out research in the field of Artificial Intelligence (AI) with a particular emphasis on developing new methods applicable to Earth Observation (EO). The specific area of research is partly chosen by you based on your own expertise and partly chosen by the team as to follow strategic directions of the Agency.

In particular, you will:

- perform your own research, while also contributing to the lab current AI4EO use cases (e.g. multi-sensor data fusion, edge computing, automatic change detection, transfer learning, mining of hyperspectral data);
- support the team rapidly prototype and evaluate AI solutions for application to EO data sets and challenges, particularly those relevant for ESA EO missions;
- adapt existing AI algorithms and tools to take account of the specific characteristics of EO data sets, physical measurement principles, and apply them to EO data applications with particular interest in hyperspectral imaging and radar imaging;
- 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 challenges on proposed topics;
- collaborate with academia and industrial partners to transfer research results to applications;
- publish in peer-review literature;
- promote/share your results and tools through new digital tools, including social media and Jupyter notebooks;
- perform and participate in assessments on subjects of strategic interest to ESA.

### Technical competencies

Knowledge relevant to the field of research

Research/publication record

Ability to conduct research autonomously

Breadth of exposure coming from past and/or current research/activities

General interest in space and space research

### Behavioural competencies

Innovation & Creativity

Continuous Learning

Communication  
Relationship Management  
Self Motivation  
Problem Solving  
Cross-Cultural Sensitivity

## Education

Applicants should have recently completed, or be close to completion of a PhD on AI, Computer Science or Machine Learning, with the subject of the thesis being relevant to the description of the tasks outlined above. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

Applicants must have obtained:

- A degree in either AI, computer science, mathematics or relevant engineering discipline.

## Additional requirements

- In depth knowledge of themes of interest, such as EO, AI, analytics, and New Space;
- Proven experience leading research, with international recognition;
- Ability to think outside the box and explore new avenues, with natural curiosity and a passion for new subjects and research areas;
- Ability to work in a multicultural environment as part of a team;
- Experience with one or more general purpose programming languages e.g. Python, and with general purpose deep learning frameworks e.g. Tensorflow, PyTorch;
- Natural curiosity and a passion for new subjects and research areas, including AI, EO, and New Space.

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 4 September 2020.**

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](mailto:contact.human.resources@esa.int).

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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 Slovenia, as an Associate Member, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Latvia, 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