Job Title: Internal Research Fellow (PostDoc) - Artificial Intelligence for Flight Dynamics Operations

Req ID **9217** - Posted **15/04/2020**

EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of Operations.

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) - Artificial Intelligence for Flight Dynamics Operations
This post is classified F2.

Location
ESOC, Darmstadt, Germany

Our team and mission
You will be based in the Earth Observation Mission Support Section of the Flight Dynamics Division. The division provides a comprehensive end-to-end, multi-project service covering all Flight Dynamics functions for the missions ESOC operates, including the provision of the necessary tools and systems and the relevant mission support from the mission analysis phase through the operation phase and up to the decommissioning phase. In addition, the division is the coordinator for mission analysis activities in ESA and undertakes innovative studies in related fields in order to prepare for future mission requirements.

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

Field(s) of activities/research
Several areas in Flight Dynamics Operations and Mission Analysis could benefit from Artificial Intelligence implementations. You will identify, assess and analyse the suitability of the areas.

Examples of these areas are:
- The prediction of geomagnetic and solar indices (which are required to predict the future density of Earth's atmosphere). Large historic datasets of these are available making them ideal for machine learning algorithms. This is important for the long term orbit prediction which directly improves current operations, and could be enabler for future applications such as autonomous on board ground track control and autonomous collision avoidance.
- Improvements of current drag density models. Drag is the major source of uncertainty in the orbit predictions of LEO satellites. Improvements in this area could lead to significant improvements in current operations and future concepts.
- Ionospheric delay predictions for tracking data processing.
- Anomaly detection in basic and derived telemetry as e.g. angular momentum. This shall enable autonomous screening of the parameters and trends, leading to further automation in the routine operations, especially for spacecraft flying in LEO.

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

Ability to gather and share relevant information

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

Education
You should have recently completed, or be close to completion of a PhD in a related technical or scientific discipline. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

Additional requirements
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 13 May 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.

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