

Internal Research Fellow (PostDoc) in On-board Payload Data Processing

Job Req ID: 12223

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Vacancy Type: Internal Research Fellow

Date Posted: 15 March 2021

Research Fellowship Opportunity in the Directorate of Technology, Engineering and Quality.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. For this purpose, we welcome applications from all qualified candidates irrespective of gender, sexual orientation, ethnicity, beliefs, age, disability or other characteristics. Applications from women are encouraged.

This post is classified F2 on the Coordinated Organisations' salary scale.

Location

ESTEC, Noordwijk, The Netherlands

Description

This opportunity is in the RF Digital Equipment and Payload Data Processing Section in the RF Payloads and Technology Division.

The Division is responsible for RF payloads, instruments and technologies for space and ground applications, including all equipment having an RF space ground interface and its associated laboratories. It provides support in the definition, specification and development procurement of laboratories for ESA projects and technology programmes and external customers.

The Section provides functional support to ESA projects and carries out technology research (R&D) in RF digital equipment and building-blocks, on-board data processing, signal and image processing approaches, related designs and processing devices.

Field(s) of activity/research

Over the past decade, rapid developments in digital technologies and in capabilities to monitor our planet from space with Earth observation satellites have enabled unprecedented monitoring of the terrestrial environment, bringing new opportunities for science and industry.

Future optical and RF payloads acquire signals with longer orbit duty cycles, improved resolution and larger swath widths. This increase in data volume, combined with the need for low latency products, calls for more efficient, flexible on-board payload data processing for data volume reduction and feature extraction.

The purpose of this research fellowship is to monitor, perform and foster research in advanced methods in on-board processing, involving novel distribution of on-board and on-ground processing functions.

Recent developments in artificial intelligence are also expected to extensively contribute to these research activities. The specific research area(s) will be based on your area of expertise and in line with the Agency's and the Section's strategic directions.

You should submit a research proposal on the application area of on-board payload data processing and/or RF digital equipment. The proposal should be no longer than five pages. The proposed research topic should focus on, but not be limited to:

- data science, signal and image processing techniques and algorithms, data selection, feature extraction, compression, and encryption for RF and optical payloads;
- data and signal processing hardware for RF remote-sensing instruments, navigation and telecommunication payloads;

Additional tasks related to this include:

- proposing and performing novel research in advanced on-board data science, signal and image processing, with ESA Member State universities where appropriate;
- publishing results in peer-reviewed publications and using modern communication tools to engage with a broader audience inside and outside ESA;
- performing or participating in the assessment of subjects of strategic interest to ESA, providing in-house expertise for strategy development;
- benefiting from the technology and engineering expertise available at ESTEC.

You will work closely with D/TEC staff as well as staff in other Directorates involved in optical and RF payloads.

Technical competencies

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

Behavioural competencies

- Result Orientation
- Operational Efficiency
- Fostering Cooperation
- Relationship Management
- Continuous Improvement
- Forward Thinking

Education

You should have recently completed, or be close to completing, a PhD in data science, digital signal or image processing, computer vision, computer science, electronics or physics. The subject of your research should be relevant to the tasks outlined above and aim at an academic/research career.

Additional requirements

Solid background in data science, signal or image processing is expected. Experience in RF or optical payloads is considered a strong asset.

Preference will be given to candidates awarded their doctorate within the last five years. Other requirements are:

- ability and interest in prospective interdisciplinary research;
- an aptitude for contextualising specialised areas of research and quickly assessing their potential with respect to other domains and applications;
- academic networking to add functioning links to universities and research institutes;
- ability to work in a team, and also individually on personal research plans and directions;
- natural curiosity and a passion for new subjects and research areas.

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.

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.

At the Agency we value diversity and we welcome people with disabilities. Whenever possible, we seek to accommodate individuals with disabilities by providing the necessary support at the workplace. The Human Resources Department can also provide assistance during the recruitment process. If you would like to discuss this further please contact us at 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