

Job Title: Young Graduate Trainee for Simulation and Validation of Science Operations

Req ID 3919 - Posted 19/01/2018



EUROPEAN SPACE AGENCY

Young Graduate Traineeship Opportunity in the Directorate of Science.

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

Young Graduate Trainee for Simulation and Validation of Science Operations

This post is classified F1.

Location

ESAC, Villanueva de la Cañada, Spain

Our team and mission

Solar Orbiter is a Cosmic Vision M-Class mission scheduled for launch in 2019. Purpose of the mission is to determine the in-situ properties and dynamics of plasma, fields and particles in the near-Sun heliosphere and to survey the fine detail of the Sun's magnetised atmosphere. The Solar Orbiter Science Operations Centre (SOC) is being developed at ESAC to provide the tools, infrastructure and know-how to plan and coordinate the operations of its 10 scientific in-situ and remote sensing instruments as well as the archiving of the resulting science data products.

The SOC team is composed by scientists and engineers with expertise on the science domains of the mission and the different areas required for the development and operations of such an infrastructure: system and software engineers, test engineers, configuration and quality engineers, etc. Therefore, the team is multidisciplinary, with members from a variety of Member States, working together following Agile (Scrum) methodology. The successful applicant will interact directly with some SOC team members in the process of carrying out the activities of this Traineeship and will gain direct visibility of the development process of the SOC.

Interested candidates are encouraged to visit the ESA website: <http://www.esa.int>

Field(s) of activities

One of the SOC responsibilities is to verify that the plan of science operations agreed with the instrument teams is feasible and within the resources and constraints of the spacecraft and mission operations. The Solar Orbiter SOC has already ad-hoc tools available for this purpose which involve, among other matters, simulating the spacecraft platform and instruments as state machines to verify that the operations resulting from the sequence of commands uploaded are within the science operations parameters agreed beforehand. The current tools have been used already by a variety of ESA Solar System science missions.

The Young Graduate Trainee (YGT) will explore whether an alternative to the current tools, to be built on top of existing discrete event simulators, is feasible. In particular, the objectives of the Traineeship will be:

- Understanding basic concepts of how science spacecraft and instruments operate in space.
- Understanding the concept and the requirements of science operations planning in science missions.
- Evaluate whether existing discrete event simulators are suitable for plan validation (an example could be OMNet++, see <https://omnetpp.org/>).
- If suitable, design and implement a proof of concept using Solar Orbiter science operations as a use case.
- Prepare a lessons learnt report explaining the findings of the evaluation.

The YGT will gain experience in:

- Working with an established team following Agile (Scrum) methodology, up to date development standards and quality assurance practices.
- Developing a project from inception to final delivery.
- The nature and operations of missions on the ESA Science Programme.
- Interacting with scientists and engineers gaining understanding of the different contributions and points of view they bring to a given endeavor.

Technical competencies

Knowledge of relevant technical domains

Relevant experience gained during internships/project work

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

Knowledge of ESA and its programmes/projects

Behavioural competencies

Self Motivation

Communication

Continuous Learning

Cross-Cultural Sensitivity

Teamwork

Education

Applicants should have just completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. Relevant education profiles for this Traineeship are (not exclusively): Computer Science, Computer Engineering, Telecommunications, Electrical Engineering.

Additional requirements

Experience on the following areas would be a plus (given in order of relevance):

- C++ object oriented programming.
- Concurrent programming concepts.
- Basic knowledge of discrete event simulation.
- Developing in a Linux environment.

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.

In addition, applicants should demonstrate good interpersonal skills and the capacity to work both independently and as part of a team.

During the interview the candidates' motivation and overall professional perspective/career goals will also be explored.

Other information

For behavioural competencies expected from ESA staff in general, please refer to the [ESA Competency Framework](#).

The closing date for applications is 04 February 2018.

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 UK, or Slovenia as an Associate Member, Canada as a Cooperating State, 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