

## Intern in the Spaceship EAC (ExPeRT) Department

**Job Req ID:** 15862

**Closing Date:** 27 July 2022

**Publication:** External Only

**Vacancy Type:** Intern

**Date Posted:** 29 June 2022

Internship Opportunity in the Directorate of Human and Robotic Exploration Programmes.

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

### Location

EAC, Porz-Wahn, Germany

### Our team and mission

Spaceship EAC: The Directorate of Human and Robotic Exploration (D/HRE) is the main ESA entity in charge of supporting and coordinating efforts towards the current and the future endeavours of human spaceflight. The exploration activities are part of the strategic plans in securing a central role for Europe with respect to the global initiatives. The European Exploration Envelope Programme (E3P) is integrating the ESA activities in this field to ensure a single exploration process. The strategy includes three destinations where humans will work with robots to gather new knowledge: Low Earth Orbit (LEO), the Moon, and Mars.

The “Spaceship EAC” initiative is investigating low Technology Readiness Level (TRL) technologies for supporting the future cislunar space mission as well as surface activities on the Moon as part of the Exploration Preparation, Research and Technology (ExPeRT) team. This multidisciplinary, innovation-driven team composed by researchers, graduate and undergraduate students is based at the ESA European Astronaut Centre (EAC). The mission statement of “Spaceship EAC” is centered on three main pillars: enhance, enable and inspire. The founding idea behind this initiative is indeed to enhance the capabilities of EAC via exploiting the spaceflight experience of the centre to develop and validate new operational concepts and valuable technologies in support of lunar human exploration scenarios. A pragmatic and research focused approach is adopted, and knowledge acquired is disseminated within ESA and the relevant scientific community.

Within Spaceship EAC, we have a number of fields where we carry out different projects. These fields are:

- Demonstrating disruptive technologies such as Virtual/Augmented Reality, collaborative robotics and their potential use cases for exploration
- Investigating novel concepts in the domain of Space Resources/In-Situ Resource Utilisation, to enable sustainable human exploration
- Using advanced manufacturing methodologies, such as additive manufacturing, for projects within the centre and for space exploration
- Demonstrating novel energy systems and concepts for future exploration as well as for the LUNA analogue facility at EAC
- Developing new ideas around medical technologies, for example, using machine learning techniques to support long term exploration

- Topics related to 'off world living', e.g. human factors, design and concept illustration

We are continually looking for innovative applicants with skills or interests in these areas to join the Spaceship EAC team. An outline of some of the projects that we have recently been progressing can be found at the ESA blog.

For more information on Spaceship EAC internships, please follow this link: [ESA - Spaceship EAC](#)

Candidates interested are encouraged to visit the ESA website: [www.esa.int/ESA](http://www.esa.int/ESA)

## **Field(s) of activity/research for the traineeship**

### **Topic 1**

Spaceship EAC – our team is always on the lookout for talented and motivated persons to join our projects. The main areas into which the initiative is currently active are: energy production and storage; radiation shielding; In Situ Resource Utilization (ISRU), materials and additive manufacturing; exercise hardware and countermeasure concepts; machine learning for exploration; robotics and human factors; conceptual illustration/design.

### **Topic 2**

Virtual/Augmented/Mixed Reality – we have previously successfully developed novel approaches to using these two technologies for activities within EAC (e.g. training, design reviews). Continued development of these projects is planned and we are looking for students with skills and interest in this area to join the team and help advance this topic.

### **Topic 3**

Collaborative Robotics – activities involving both humans and robotic systems working together have long featured in exploration roadmaps. In the past, Spaceship EAC has worked closely with colleagues from other ESA sites with this topic in mind. Concepts relating to human centered design for robotic interfaces, collaborative assembly and control methodologies are of interest. Students with skills and experience in this area are welcome to apply.

## **Behavioural competencies**

Result Orientation

Operational Efficiency

Fostering Cooperation

Relationship Management

Continuous Improvement

Forward Thinking

## **Education**

You must be enrolled at university for the entire duration of the internship. You should preferably be in your final or second to last year of a University course at master's level in a technical or scientific discipline.

## **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.

The topics listed in Section 2 above respectively require such educational knowledge as:

### **Topic 2**

Demonstrable skills in VR, AR or video game development

### **Topic 3**

Experience with robotics, human-machine interfaces and computer programming

**Other information**

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

If you require support with your application due to a disability, please email [contact.human.resources@esa.int](mailto:contact.human.resources@esa.int).

Internships can take place remotely, on-site or partially on-site depending on the pandemic situation, and in line with the relevant Establishment's policy (e.g. possible Green Pass requirement) applicable at the time of starting the internship.

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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 Latvia, Lithuania and Slovenia, as Associate Member States, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus and Slovakia as European Cooperating States (ECS).