

Intern in EAC in the Space Training Team, CAVES and PANGAEA 1/2 (Remote)

Job Req ID: 12544
Closing Date: 25 June 2021
Publication: External Only
Vacancy Type: Intern
Date Posted: 28 May 2021

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. Applications from women are encouraged.

Location

EAC, Porz-Wahn, Germany

Our team and mission

The CAVES and PANGAEA team specialises in training programmes that equip astronauts and mission developers with scientific, expeditionary and behavioural skills. The group's primary output is focused around two training programmes, CAVES, a course that uses natural cave systems for expeditionary and human behavioural and performance training, and PANGAEA, a course for geological and astrobiological field training. Complementary to their training goals, these programmes are used as research and development platforms to advance several of ESA's technological, scientific and operational areas.

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

Field(s) of activity/research for the traineeship

As this opportunity for interns (students in their ultimate/penultimate year of their Masters) is opened at department level, it proposes you a choice of activities/topics for internships/learning areas in which an internship can be undertaken.

1) Topic 1: Machine learning for recognition of planetary materials from multispectral datasets.

Interns are sought to continue development of machine learning algorithms for recognition of planetary materials from multispectral datasets. This project focuses on combining several mineral characteristics to achieve automatic classification.

For detailed information on this internship position, please click

here: https://www.esa.int/About_Us/EAC/Space_training_team_Planetary_Mineral_Database_Development_and_Validation_of_Spectra_Classifi

2) Topic 2: Development of Analytical Toolset for recognition of Planetary Materials and Validation of Spectra Classification Methods.

Interns are sought to continue enhancing and developing our analytical toolset consisting of multi-spectral archives and mineralogical catalogues.

They will also help in the testing of a machine learning software to evaluate the most suitable spectral identification method of planetary materials, and with the preparation of the PANGAEA training course.

For detailed information on this internship position, please click

here: https://www.esa.int/About_Us/EAC/Space_training_team_Planetary_Mineral_Database_Development_and_Validation_of_Spectra_Classif

3) Topic 3: Development of a framework for analysis of Astronaut Training Data.

Interns are sought to help develop a framework for data analysis on the transactional, scheduling, instructional, and multimedia data stored in the Astronaut Training Development & Implementation System (ATD). This project will focus on the identification of ATD data suitable for analysis, data anonymization, data mining and machine learning tools and methods for the processing and clustering information, and the creation of reports on obtained results supporting knowledge discovery and ATD business process optimisation.

For detailed information on this internship position, please click here:

https://www.esa.int/About_Us/EAC/Space_training_team_Data_analysis_for_the_Astronaut_Training_Database_ATD

Behavioural competencies

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

Education

You must have student status and 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 Masters 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 above respectively require such educational knowledge as:

Topic 1:

Practical experience in Machine Learning based classifications (and/or data mining, data fusion, statistics, clustering, decomposition/unmixing, recommender systems or other alternative classification methods), or in the processing and analysis of data coming from analytical instrumentation. Academic or professional experience with the programming languages and frameworks currently used in the project: Python, TensorFlow, Keras, Scikit-learn, Numpy, matplotlib. Additional experience in Jupiter notebook, HTML, JavaScript, analysis and visualisation of scientific data is considered a plus.

Topic 2:

Having a good knowledge of and practical experience in using or developing of analytical methods and instrumentation, in particular of molecular and atomic spectroscopy (VNIR, Raman, LIBS, XRF), or working with digital information catalogues and databases are a benefit.

Familiarisation with geochemistry, mineralogy and petrology, or attendance of courses related to planetary geology, astrobiology or planetology would be an asset.

Topic 3:

Practical experience in Machine Learning based classifications, or in the analysis of data coming from complex relational databases, as well as structured or unstructured data. Academic or professional experience with the programming languages and frameworks currently used in the ATD project: ASP.Net, T-SQL, HTML, Javascript, MS Visual Studio, MS SQL Server. Practical experience with data anonymization, educational data mining techniques would be an asset.

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.

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).