Training Opportunity for Portuguese Trainees

Reference	Title	Duty Station
PT-2020-EOP-ΦLE	**Big Earth Observation (EO) Data Analytics with Artificial Intelligence (AI)**	**ESRIN**

Overview of the unit's mission:

The Φ-lab in ESRIN aims to accelerate the future of Earth Observation (EO) by helping the European industry and research communities to rapidly adopt disruptive technologies. A particular interest of the lab is to promote the use of Artificial Intelligence (AI) techniques to enable users and scientists to extract maximum information from the large amount of Earth Observation (EO) data sets.

Overview of the field of activity proposed:

The emergence of big data creates new opportunities but also new challenges for scientists, business, data and software providers to make sense of the vast and diverse amount of data by capitalizing on powerful techniques such as Artificial Intelligence (AI). Until recently AI was mainly a restricted field occupied by experts and scientists, but today it is routinely used in everyday life without us even noticing it, in applications ranging from recommendation engines, language services, face recognition and autonomous vehicles. Over the last decade, Machine Learning has gone through a major revolution, through the unique convergence of powerful computing capability, easy access to large volumes of data, and the availability of new algorithms enabling robust training of large-scale deep neural networks.

The application of AI to EO data is just at its infancy and today focusses mainly on computer vision techniques applied to Very High-Resolution satellite imagery, while there are certainly many areas of Earth Science and big data analytics, which could increasingly benefit from AI, leading to entire new types of value chain, scientific knowledge and innovative EO services.

In this context, this traineeship opportunity aims to further explore the wider potential AI4EO applications, in particular through a development of new AI methods across applications, ranging from multi-sensor data fusion, edge computing, automatic change detection, transfer learning, up to mining of hyperspectral data. This includes adapting existing AI algorithms and tools to take account of the specific characteristics of EO data sets, physical measurement principles, and apply them to EO data applications (e.g. Sentinel).

You will be part of a multi-disciplinary team of researchers and data scientists passionate about innovation, and work within an inspiring and collaborative open-space environment. You will help the team rapidly prototype and evaluate AI solutions for application to EO data sets and challenges, and also prepare training data sets to be used for development and evaluation of AI algorithms.

Required education:
Applicants must be fluent in English and/or French, the working languages of the Agency. A good proficiency in English is required. Applicants should have recently completed, or be in their final year of a University course at Masters Level (or equivalent) in a technical or scientific discipline. e.g. computer science, mathematics, data analytics, or relevant engineering discipline. Experience with general purpose programming languages (e.g. Python) and deep learning frameworks (e.g. Tensorflow, PyTorch). Natural curiosity and a passion for new subjects and research areas, including AI, EO, and New Space. Applicants should have good interpersonal and communication skills and should be able to work in a multi- cultural environment as part of a team.