



REMOTE SENSING SCIENTIST SPECIALIZED IN IMAGE CLASSIFICATION (M/F)

Permanent contract | Fulltime/40h | Belvaux

Your work environment

The Luxembourg Institute of Science and Technology (LIST) is a Research and Technology Organization (RTO) active in the fields of materials, environment and IT. By transforming scientific knowledge into technologies, smart data and tools, LIST empowers citizens in their choices, public authorities in their decisions and businesses in their strategies.

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You will be part of the LIST Environmental Research and Innovation department

As part of a Research and Technology Organization (RTO), the work of the Environmental Research and Innovation (ERIN) Department tackles some of the major environmental challenges our society is facing today (e.g. adaptation to climate change, ecosystem resilience, sustainable energy systems, efficient use of renewable resources, environmental pollution prevention and control).

To this end, the mission of the ERIN department is:

- (1) to conduct impact-driven scientific research and development, as well as technological innovation;
- (2) to support companies in the implementation of new environmental regulations and advise governments on determining sustainable policies for the future, with the objectives of:
 - Analysing, managing and exploiting sustainable resources (water, air, soil, renewable energy, bioresources)
 - Reducing the environmental impact of human consumption and production activities

Within the ERIN department, the 'Environmental Sensing and Modelling' (ENVISION) unit contributes to this mission by carrying out impact-driven research, geared towards monitoring, forecasting and predicting environmental systems in a changing world. An interdisciplinary team of around 50 scientists, engineers, post-docs and PhD candidates is developing new environmental process understanding, alongside new tools and technologies – operating at unprecedented spatial and temporal scales.

Embedded into the ENVISION unit, the 'Remote sensing and natural resources modelling' research group capitalizes on a blend of remote sensing data obtained from space- and air-borne platforms, as well as *in-situ* measured data (collected from heterogeneous IoT devices), for producing information on the status of natural resources for public and private stakeholders.

To strengthen its activities in natural resource modelling and end-to-end decision support tools, LIST is offering a permanent position for a remote sensing scientist specialized in image classification. You will leverage Earth Observation (EO) and Internet of Things (IoT) data for contributing to the design or advancement of image classification methods. In particular, you will use Deep Learning/Machine Learning-based numerical models to convert remote sensing data into key environmental variables that shall be used across a wide range of applications (e.g., natural disasters such as floods and droughts, water resources management, maritime surveillance, food security, precision agriculture, natural resource management, etc.). You will

Job reference: ERIN-2020-021

Application file:

- A CV (which includes a list of the most relevant developed software, and the most relevant projects that he/she acquired, or he/she contributed to)
- A motivation letter
- References names of two or three referees

Apply online:

https://www.list.lu/en/jobs/environment-job-opportunities/job-offer/erin-2020-021/?no_cache=1&cHash=145d06c85cd643594509eee58dab9cc0

Your working environment

The research department

<https://www.list.lu/en/research/erin/>

<https://www.list.lu/en/jobs/researchers/>



build end-to-end processing chains from data collection to model definition, implementation, testing and benchmarking. For carrying out these tasks, you will work with an international highly interdisciplinary team of scientists and engineers with expertise in remote sensing (optical and radar), IoT, hydrology and plant physiology.

What you will be doing

You will contribute to RDI projects by:

- Developing and coding innovative scientific Deep Learning/Machine Learning algorithms to classify and extract key environmental variables from EO and IoT (in-situ measured) data
- Developing innovative data-drive classification and parameter retrieval algorithms applicable at large scale in the domain of natural disasters, water resources, maritime surveillance, food security, precision agriculture and land management
- Processing and analysing large collections of optical and radar satellite data, e.g. Sentinel-1 and Sentinel-2
- Integrating and implementing scientific algorithms on high performance and distributed computing infrastructures to support the development of operational Earth Observation applications, and end-to-end decision support tools (leveraging on IoT and EO data)
- Contributing to software development, integration, testing and deployment
- Contributing to the development of partnerships and networks at national and international levels
- Contributing to the technical content of new research proposals and commercialisation projects
- Disseminating and publishing the results in top ranked scientific journals

Moreover, you will contribute to the dissemination, valorisation and transfer of RDI results through:

- Software licensing
- Participation in the drafting of technical reports, scientific articles, patents and inventions
- Participation in the implementation of technological solutions (proof-of-concepts, prototypes)

Which profile we are looking for

Educational background

- PhD in remote sensing, image or signal processing, machine learning, applied mathematics, computer engineering, telecommunications engineering or computer sciences (or similar)

Technical skills

- Good knowledge of EO toolkits (e.g., GDAL, SNAP, EnMAP box, etc.)
- Excellent programming skills (e.g. python, C/C++, matlab, IDL, etc.)
- Advanced knowledge of different deep learning and machine learning algorithms for supervised, unsupervised, and semi-supervised learning
- Experience in applying deep learning and machine learning algorithms to different data sets and in particular Earth Observation data for classification, image segmentation and geophysical parameters retrieval (e.g. Sentinel-1 and -2, Worldview, TerraSAR-X, COSMO-SkyMed, etc.)
- Hands-on experience with at least one of the following popular machine learning/deep learning frameworks: Scikit-learn, Tensorflow, Pytorch, and Keras
- Knowledge of advanced statistical methods to evaluate Machine Learning models
- Experience with distributed cloud storage systems and cloud computing services
- Experience in HPC (including heterogeneous architectures)
- Experience with image processing software
- Excellent communication skills in presenting scientific research, and writing papers in scientific journals, technical reports and proposals
- Communicative and willing to learn, self-organized, and creative
- Ability to work both independently and collaboratively in an international team across the ENVISION RDI unit

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The LIST is committed with equality of opportunities and gender balance

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LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY



Language skills

- Fluent in English (written and oral)
- Knowledge in at least one of the official languages of Luxembourg (French, German or Luxembourgish) is an asset

Interested ? Please apply online

https://www.list.lu/en/jobs/environment-job-opportunities/job-offer/erin-2020-021/?no_cache=1&cHash=145d06c85cd643594509eee58dab9cc0

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