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ministère éducation nationale

SORBONNE UNIVERSITÉ

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Fiche de poste

Métier ou emploi type* : E2A41 - Administrateur-trice des systèmes d'information
* REME, REFERENS, BIBLIOPHILE

Fonctions : Data management for plankton images

Catégorie : A
Corps : Ingénieur d'études
BAP (si ITRF) : E

Les activités qui composent la fiche de poste sont appelées à évoluer en fonction des connaissances du métier et des nécessités de service.

Présentation de Sorbonne Université

Pour transmettre les connaissances, comprendre le monde et relever les défis du 21e siècle, une nouvelle université est née le 1er janvier 2018, issue de la fusion entre les universités Paris-Sorbonne et Pierre et Marie Curie. Sorbonne Université est une université pluridisciplinaire, de recherche intensive et de rang mondial. Ancrée au cœur de Paris, présente en région, elle est engagée pour la réussite de ses étudiants et s'attache à répondre aux enjeux scientifiques du 21e siècle. www.sorbonne-universite.fr

Présentation de la structure (laboratoire, département de formation, service central…)

Description (missions, équipe,…) : The Laboratory of Oceanography of Villefranche-sur-mer (LOV; http://lov.obs-vlfr.fr/) is located close to Nice, on the French Riviera. It belongs to one of the three marine stations of Sorbonne Université. With about 90 permanent staff, the LOV generates and analyses a large quantity of marine data, including imaging, genomic, and satellite data to study the ocean.
The COMPLEx (COMPutational PLankton Ecology) team gathers ~30 members studying marine plankton by collecting data with quantitative imaging instruments and high throughput genomics, then feeding into numerical analysis methods (modeling, statistics, machine learning). Plankton encompasses all organisms roaming with marine currents. Those organisms are responsible for producing some of the oxygen we breathe, storing the carbon we emit, feeding the fish we eat; plankton is therefore a major building block of Earth's ecosystem. COMPLEx strongly interacts with the Quantitative Imaging Platform of Villefranche (PIQv; https://sites.google.com/view/piqv), which oversees the operation of tools that the team develops. Those tools include imaging sensors, such as the Underwater Vision Profiler or the ZooScan, and software packages, such as ZooProcess or the EcoTaxa web application (https://ecotaxa.obs-vlfr.fr/) that uses machine learning to assist taxonomists into sorting plankton images. We also have a long experience in interacting with computer scientists, in academia (e.g. LS2N in Nantes, I3S in Nice, ENSTA in Paris, MIP in Kiel) but also in the private sector (e.g. Google Brain lab in Paris).

Localisation : Villefranche-sur-mer

Missions et activités principales

Mission (raison d'être du poste) : Manage the quantitative imaging data collected by the team and its partners through various ongoing projects.

Members of COMPLEx are involved in several ongoing projects: pan-oceanic cruises with the Tara shooner, TRIATLAS and AtlanECO for plankton ecology in the offshore Atlantic, JERICO-S3 for coastal observations, BlueCloud for data integration at European level, MarTERA and TechOceanS for instrument development, etc. In all projects, one of their goals is to collect plankton images and extract data from them. A major hindrance to

the quick extraction of knowledge from the data is the amount of data handling needed between its acquisition and its use, for which the team has no dedicated expertise and therefore developed only sub-optimal approaches. This position is destined to fulfill this pivotal role in the team's activity.

Activités principales (10 maximum) :

- ensure the data collected fits in the existing data stores and databases of the team
- develop quality control routines and dashboards before database ingestion, that are usable by other operators with no programming background
- develop custom database extractions routines/packages using the APIs of the databases
- provide overview tables and plots of the extracted data
- specify requirements for the development of the quality control routines, the APIs etc. to distribute to subcontractors
- possibly help rewrite some data processing routines involving computer vision algorithms

Le cas échéant autres activités du poste :

It may be relevant for the candidate to go at sea to participate in and understand the full process from data acquisition to data storage.

Encadrement : NON
Nb agents encadrés par catégorie : … A - … B - … C

Connaissances et Compétences*

Connaissances transversales requises :

- Database and APIs usage
- Data handling in various formats: geospatial, flat tables, etc.
- Unit testing of code and data properties
- Interactive dashboards building
- Some knowledge of image processing/computer vision would be a plus

Savoir-faire :

- Proficiency in scripting languages such as R and Python (or MATLAB).
- Knowledge of SQL.
- Applicants should be comfortable handling datasets with millions of records and interacting with the databases that host them, all in a Unix environment.
- Experience will image processing software such as scikit-image or ImageJ would be a plus

Savoir-faire transversaux :

- Ability to interact with environmental scientists, who may have limited knowledge of the technical domain of expertise of the position
- Write synthetic reports and tutorials for other team members
- Scientific and technical English (B2 level for written and oral). French would be a plus, but it is not mandatory.
- An interest towards ecology, marine in particular would be welcome to keep the applicant motivated.

Savoir être (3 maximum) :

- Strong ability for teamwork, since the position is at a central place in the team
- Autonomy to suggest and implement technical solutions

Conditions particulières d'exercice : For further information and to apply, contact irisson@obs-vlfr.fr

* Conformément à l'annexe de l'arrêté du 18 mars 2013 (NOR : MENH1305559A)