Offer #2024-08146

Post-doctoral research position on plant disease identification based on deep learning

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Tempary Research Position

About the research centre or Inria department

The Inria center at Université Côte d'Azur includes 42 research teams and 9 support services. The center's staff (about 500 people) is made up of scientists of different nationalities, engineers, technicians and administrative staff. The teams are mainly located on the university campuses of Sophia Antipolis and Nice as well as Montpellier, in close collaboration with research and higher education laboratories and establishments (Université Côte d'Azur, CNRS, INRAE, INSERM ...), but also with the regional economic players.

With a presence in the fields of computational neuroscience and biology, data science and modeling, software engineering and certification, as well as collaborative robotics, the Inria Centre at Université Côte d'Azur is a major player in terms of scientific excellence through its results and collaborations at both European and international levels.

Context

This position will be funded as part of the Pl@ntAgroEco project which goal is to design, test and develop new services for agroecology within the Pl@ntNet platform.

Assignment

The control of plant diseases is a major challenge to ensure global food security and sustainable agriculture. Recently, deep learning based image recognition techniques have shown very promising results towards improving existing procedures for early detection and diagnosis of plant diseases. However, the performances are still insufficient and needs to be significantly improved through (i) the integration of new massive training data at large taxonomic and geographic scales (in particular via ePhytia and Pl@ntNet), and (ii) the development of more effective AI models combining visual information (photos) with other environmental and contextual information (e.g. climate, land use, soil, etc.). The selection of these complementary modalities will be based on their benefit in terms of recognition accuracy but also in terms of their ease of integration and maintenance in the Pl@ntNet platform.

Main activities

Main activities :

- data cleaning and structuring
- training and evaluation of image classification models (from self-supervised foundation models)
- training and evaluation of multi-modal plant disease prediction models
- technological transfer in collaboration with Pl@ntNet engineers

Additional activities :

- Writing of scientific papers
- Participation to project meetings
- presentation in conferences

Skills

Technical skills and level required :

- PhD in data science
- strong experience in deep learning
- strong skills in python, pytorch

Other valued appreciated :

- experience in training large-scale deep learning models on super-computers
- knowledge in life sciences
- experience in collaborative work contexts

Language : english

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Contribution to mutual insurance (subject to conditions)

Remuneration

Gross Salary : 2788 € per month

General Information

- **Theme/Domain :** Optimization, machine learning and statistical methods
  Biologie et santé, Sciences de la vie et de la terre (BAP A)
- **Town/city :** Montpellier
- **Inria Center :** [Centre Inria d'Université Côte d'Azur](#)
- **Starting date :** 2025-01-01
- **Duration of contract :** 1 year, 6 months
- **Deadline to apply :** 2024-12-31

Contacts

- **Inria Team :** [ZENITH](#)
- **Recruiter :**
  Joly Alexis / Alexis.Joly@inria.fr

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

> **Warning** : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply

Applications must be submitted online on the Inria website. Collecting applications by other channels is not guaranteed.

Defence Security :
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST).Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy :
As part of its diversity policy, all Inria positions are accessible to people with disabilities.