Offer #2025-08746

Temporary scientific engineer / Development of a multi-disease spatial epidemiological model

Contract type : Fixed-term contract

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

About the research centre or Inria department

The Inria centre at Université Côte d'Azur includes 42 research teams and 9 support services. The centre's staff (about 500 people) is made up of scientists of di?erent 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 regiona 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 postdoctoral position if funded by the Ecophyto PAPEETE *Promoting agroecology through integrative health risk prediction based on participatory epidemiosurveillance data at territorial scale* project, which brings together partners from INRAE, CNRS and Inria. This transdisciplinary project aims at providing a proof of concept, for wheat diseases, that using participatory epidemiosurveillance, in addition to the official plant health bulletin, (i) enables a local assessment of multi-disease risk, and (ii) encourages stakeholders to significantly reduce pesticide use.

The postdoctoral fellow will join the MACBES team (Inria, INRAE, CNRS, Université Côte d'Azur) in Sophia Antipolis and will closely collaborate with Suzanne Touzeau (MACBES & M2P2 teams) and Florence Carpentier (AgroParisTech & MaIAGE, INRAE) based near Paris.

The postdoctoral fellow will interact with other PAPEETE partners and the M2P2 team at ISA (INRAE, CNRS & Université Côte d'Azur).

Assignment

In the PAPEETE project, we aim at improving the local assessment of multi-disease risk in wheat crops by incorporating multiple data sources, including participatory epidemiosurveillance data. Several scenarios are considered, and a decision-support application will be developed.

The project builds upon several years of academic data collected in the Plaine & Val de Sèvre area (near Niort), which have revealed the influence of landscape features on the epidemiology of wheat diseases. We also have an existing multi-epidemic dynamics model. The engineer will be responsible for improving the existing multi-epidemic dynamics model. Specifically, their tasks will be to: (1) spatialize the model, (2) incorporate landscape effects, and (3) modulate outputs using weather data and epidemiosurveillance information - both participatory (local) and from the regional BSV network. The data will be provided by the project team, and the engineer will focus on integrating them into the modeling framework and analyzing model behavior.

The results of this work will feed into the development of a real-time, spatially explicit tool to help local farmers assess their risk of multiple wheat diseases and support decision-making to reduce pesticide use.

The work will be **based on**:

- data,
- a stochastic, discrete-time, epidemiological model,
- python and C++ codes.

The **objectives** of this position are:

- epidemiological modelling,
    - landscape modelling,
    - multi-disease timing and interactions,
- calibration,
- simulations.

Main activities

Generic activities include: literature review, data processing, reporting, paper writing, participation and presentation in project meetings.

Specific activities include:

- dynamical model development,
- programming and numerical simulations (using a computing cluster),
- model calibration,
- numerical exploration (sensitivity analysis).

Skills

- Background in population dynamics and/or epidemiological modelling.
- Experience in programming (C++ or python).
- Knowledge of inference methods would be a plus.
- Proficiency in written and spoken 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 (after 6 months of employment) 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

From 2692 € gross monthly (according to degree and experience).

General Information

- **Theme/Domain :** Modeling and Control for Life Sciences
- **Town/city :** Sophia Antipolis
- **Inria Center :** Centre Inria d'Université Côte d'Azur
- **Starting date :** 2026-01-01
- **Duration of contract :** 12 months
- **Deadline to apply :** 2025-09-30

Contacts

- **Inria Team :** MACBES
- **Recruiter :**
  Touzeau Suzanne / suzanne.touzeau@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.

The keys to success

- Modelling skills in population dynamics or epidemiology.
- Marked interest in biological applications and motivation for interdisciplinary work.
- Good communication skills to ensure a smooth collaboration with Florence Carpentier.

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.