

Job Opening: Research Engineer / Postdoctoral Fellow in Remote Sensing and Forest Phenotyping (M/F)

Fixed-Term Contract - Avignon (84) - INRAE URFM

Context

INRAE's Mediterranean Forest Ecology Research Unit (URFM) is recruiting a research engineer or postdoctoral fellow as part of the Franco-German PangenomeBeech project, funded by the ANR and the DFG.

This project aims to understand the genetic basis of the European beech's (*Fagus sylvatica*) adaptation to climate change by combining large-scale genomics (pan-genome, pan-GWAS, pan-GEA) with high-throughput phenotyping, using drone-acquired imagery (RGB, multispectral).

More than 2,000 trees from approximately 50 European provenances are being monitored to characterize phenotypic traits, particularly phenology (budbreak and senescence).

Your work environment :

You will join the BioPopEvol team at INRAE's Mediterranean Forest Ecology Research Unit (URFM), based in Avignon.

You will be supervised by Ivan Scotti, a research director at INRAE and the French coordinator of the PangenomeBeech project, and will work closely with a research engineer responsible for phenotypic data collection, as well as with other team members and the project's German partners at the Thünen Institute.

You will interact regularly with researchers, engineers, doctoral students, and technicians involved in the ecology and genomics components of the project.

To learn more about URFM and its activities: [URFM - INRAE](#)

Your Responsibilities :

You will be responsible for :

- (1) Developing reproducible image processing workflows for RGB and multispectral images acquired by drone that can be used by other team members.
- (2) Interpret this drone-acquired data to characterize the main phenotypic traits of trees, particularly their phenology (budbreak, senescence) as well as their growth and reproduction.
- (3) Correlate and verify the accuracy of indices derived from imagery against field observations.
- (4) Develop a robust method for automatically or semi-automatically identifying and tracking individual tree crowns across different data acquisition campaigns, within a dense forest stand and using RTK-georeferenced data, to ensure the production of reliable time series.
- (5) Ensure the management, quality, and traceability of the produced datasets
- (6) Develop reproducible tools and pipelines that can be used by other team members
- (7) Contribute to the scientific dissemination of the work (publications, presentations, etc.)

Candidate profile :

Education :

Ph.D. or engineering degree in remote sensing, geomatics, or image processing. Specialization in forest remote sensing would be an asset.

Required skills:

- Proficiency in remote sensing methods applied to natural environments
- Proficiency in a scientific programming language, particularly Python
- Proficiency in GIS tools (QGIS or ArcGIS)
- Ability to design and evaluate new image processing approaches to address scientific problems
- Ability to develop and automate reproducible data processing workflows
- Ability to present work orally in English to international partners

Desirable experience:

- Experience processing data acquired by drones (RGB, multispectral, and possibly LiDAR)
- Experience in photogrammetry (orthomosaic production, 3D models)
- Knowledge of LiDAR data processing tools (R, Python, or specialized software)
- Experience in field data acquisition (RTK, drone campaigns, ground-based or mobile LiDAR, etc.)

Desired Qualities:

You demonstrate:

- Independence and organizational skills
- Scientific rigor
- The ability to work as part of a team in an interdisciplinary setting and to adapt your objectives as projects evolve
- Curiosity and interest in developing new methods

Working Conditions :

- Position based in Avignon (84)
- Regular travel to Normandy during the budbreak (spring) and senescence (fall) campaigns
- Occasional travel to Germany and other experimental sites such as Mont Ventoux
- Participation in drone data collection may be considered depending on project needs. Training in drone piloting may be offered if necessary.
- Driver's license desired

Duration : 12 months, renewable

Salary : from €2,815 to €4,565 gross per month, depending on professional experience at an equivalent level.

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