PHENOSPEX

Position : **PhD at IRD in collaboration with Phenospex**
Location : **Montpellier (F) and Heerlen (NL)**

Identify architectural plant traits with 3D image analysis (Python/R)
Bioinformatics, Computer science or similar

The French National **Research Institute for Sustainable Development** (IRD) in Montpellier, France, invites applications of highly motivated individuals for a PhD position on 3D image analysis (Python/R) of plants. With this project you will support to secure global food demand during climate change.

Project Summary and Responsibilities

You will have the unique opportunity to support the preservation of global food demand by investigating how plants adapt their canopy architecture in response to increased population density. The goal is to use this knowledge to improve plant breeding and to select for water saving traits. This project is a collaboration between IRD in Montpellier (France) which has extensive knowledge in plant science and breeding and Phenospex - a leader in the field of digital plant phenotyping tools.

At the IRD site in Montpellier (F) you will develop a concept on what plant features to measure and conduct experiments to capture the plant canopy using PlantEye, a cutting edge 3D multispectral sensor.

You will spend time at the Phenospex headquarters (Heerlen, NL) where the R&D team will support you with the development of algorithms and prototypes to extract relevant information (plant features) from 3D point clouds.

During the experiments in Montpellier you will also capture transpiration data from the plants using the Phenospex FieldScales. This data can be used to validate the hypothesis by comparing the plant feature data your algorithms and tools generate with the transpiration data. For this effort, machine learning knowledge is a plus but will only be applied when needed.

In more detail you will:

- develop a concept, algorithms and prototypes to characterize the canopy structure of cereals
- develop the capacity to measure traits characterizing the canopy architecture such as the leaf attachment angle or the vertical leaf area distribution in the canopy using 3D data point clouds generated from the 3D multispectral scanner
- test the hypothesis that canopy architecture may alter the canopy microclimate in a different way in different genotypes

This 3 year project will start in September 2021 and will be performed in close collaboration with

- Team CERES at UMR DIADE (F) where the phenotyping and plant biology experiments will be conducted, and
- Phenospex (NL) who is the provider of the unique PlantEye and where the software is developed.

Qualification profile

- Highly motivated individuals with a university degree (M.Sc. or equivalent) in computer science or bioinformatics or related discipline with an interest in image analysis and plant biology or genetics.
- Experience with R and Python (C++ would be a plus)
- Excellent analytical and organizational skills
- Ability to work independently in competitive, multidisciplinary international teams
- Very good English – verbal and written
- Machine learning knowledge is a plus
- Valid EU work permit

What we offer

- an inspiring working environment in a highly motivated international team
- exciting and cutting-edge technologies
- team events and flexible working hours as well as coffee, tea, fruit, table soccer and more fun stuff
- participation and lots of room for personal growth

We look forward to receiving your application via e-mail to a.mueller@phenospex.com. Please include a CV, a letter of motivation and all academic certificates.