OPEN PHD POSITION ON PLANT PHENOTYPING

SYSTEMS FOR NON-INVASIVE MONITORING OF PLANT FITNESS AND GROWTH PERFORMANCE

Description

R&D department of Photon Systems Instruments (PSI) is looking for a motivated and skilled candidate for a PhD position on „plant phenotyping and image analysis tools" in frame of EU international training network (ITN) project SE2B. PSI is internationally recognized and innovation oriented SME company offering application-oriented research opportunity in field of automated plant phenotyping.

The PhD project will deal with "Phenotyping methods for non-invasive monitoring of plant fitness and growth performance in controlled and greenhouse environment" and will focus on development and validation of automated image analysis and data analysis tools.

The successful candidate will focus on the establishment, validation, data analysis and further development of automated image processing tools for high-throughput high-precission processing of plant fitness and growth performance image data. Data will be available from unique greenhouse and controlled environment -based automated multi-sensoric PlantScreen™ phenotyping platforms.

Background

Plant phenotyping refers to a quantitative characterisation of the plant's anatomical, ontogenetical, physiological and biochemical properties at regular time intervals, non-destructively and objectively. In past years plant phenotyping became increasingly automated by the development of novel imaging technologies and image analysis pipelines that allow for a characterization of plant traits in high-throughput and high-precission. The field of image-based phenotyping has broadened from the initial characterization of single-plant traits in controlled conditions towards greenhouse and field applications and multi-dimensional dynamic phenotyping of morphological, physiological and biochemical traits.

In several past years PSI has developped and manufactured range of automated plant phenotyping systems for controlled and greenhouse conditions. The PlantScreen Phenotyping Systems are designed for in-depth phenotyping of small up to large-scale plants ranging from Arabidopsis to crop species by means of RGB, kinetic chlorophyll fluorescence, thermal infrared, 3D laser scanning and hyperspectral imaging systems.

The project aims to focus on further development and validation of current image processing and data analysis tools, optimize and standardize the processing and data analysis algorithms with special focus on spectral data coming from the hyperspectral imaging sensor and projectionof the acquired data on 3D structural models. The insights obtained will be translated into actual applications in basic research and in agriculture research.

The 3-year project is funded by Marie Curie Actions (Innovative Training Network).

Requirements

We are looking for an excellent student who is a result-driven team player with good communication skills and good proficiency in English (both oral and written).

Specific requirements:

- A university degree at MSc level in plant sciences, biotechnology, bioinformatics and mathematical biology
- Strong scientific interest in large data set analysis and automated image-analysis
- Profound knowledge of bioinformatics, statistics, programming (Matlab, R-scripting, ..)
- Experience with photosynthesis research is of advantage (gas exchange, chlorophyll fluorescence)
- Capability to operate in dynamic environment between universities and private companies

Employer

PSI develops and provides sophisticated, high-end scientific instrumentation for research in biological and agriculture sciences. PSI provides devices for laboratory, greenhouse and field research in areas of plant and algal biotechnology. Our

key focus is to provide solutions in the field of advanced imaging as kinetic chlorophyll fluorescence and reflectance techniques, intelligent growth chambers, high-tech photobioreactors, and customized platforms for high-throughput plant phenotyping. Our expertise in high-precission plant phenotyping is in manufacturing fully automated platforms for high-throughput monitoring of plant performance and architecture in controlled environments, greenhouse or in the field.

PSI is located next to Brno, second largest city of Czech Republic that was recently rated by NY Times among 52 places on the world to visit in 2016 http://www.nytimes.com/interactive/2016/01/07/travel/places-to-visit.html?_r=0.

In 2015 PSI Phenotyping Research Center has been founded to serve science-to-innovation interphase and to translate the novel technology developments into suitable applications that can be directly validated in agronomically driven research tasks.

The succesful candidate will work in a mixed team of company and university employees and will be involved in close cooperative partnerships between PSI and internationally renowed groups involved in automated high-throughput phenotyping.

Application

Researchers applying for a PhD position are eligible if they are still within the first four years of their career in research at the time of appointment (full time equivalent). For more details please check the information on SE2B web page: http://se2b.eu

Motivated candidates are asked to send their application before **30st July 2018** to panzarova@psi.cz. Please provide the CV, motivation lettre, at least one reference lettre and the contact information of two referees.

For further information about working at PSI, take a look at www.psi.cz.