

# CALL FOR PAPERS

## Machine Vision and Applications

### Special Issue on

### Computer Vision and Image Analysis in Plant Phenotyping

#### Important Dates

Call for Papers: Feb 2015  
 Submission: April 20 2015, 11:59PM Pacific Time  
 First round decisions: June 30 2015  
 Revision deadline: July 30, 2015, 11:59PM Pacific Time  
 Final round decisions: Aug 30 2015  
 Online publication: November 2015

#### Scope

Plant phenotyping is the identification of effects on the phenotype (i.e., the plant appearance and behavior) as a result of genotype differences (i.e., differences in the genetic code) and the environment. Previously, the process of taking phenotypic measurements has been manual, costly, and time consuming. In recent years, non-invasive, imaging-based methods have become more common.

These images are recorded by a range of capture devices from small embedded camera systems to multi-million Euro smart-greenhouses, at scales ranging from microscopic images of cells, to entire fields captured by UAVs.

These images need to be analyzed in a high throughput, robust, and accurate manner. UN-FAO statistics show that according to current population predictions we will need to achieve a 70% increase in food productivity by 2050, simply to maintain current global nutrition levels. Phenomics – large-scale measurement of plant traits – is the bottleneck here, and machine vision is ideally placed to help. However, the occurring problems differ from usual tasks addressed by the computer vision community due to the requirements posed by this application scenario.

Dealing with these new problems has spawned new specialized workshops such as CVPPP (Computer Vision Problems in Plant Phenotyping) which was held for the first time in conjunction with ECCV 2014, and the stand-alone workshop IAMPS (Image Analysis Methods for the Plant Sciences) now in its fourth year.

The overriding goal of this special issue is to focus on submissions that propose interesting computer vision solutions, but also submissions that introduce challenging computer vision problems in plant phenotyping accompanied with benchmark datasets and suitable performance evaluation methods.

Specific topics of interest include, but are not limited to, the following:

- problem statements accompanied by image data sets defining plant phenotyping challenges, complete with annotations if appropriate, accompanied with benchmark methods if possible, and suitable evaluation methods
- advances in segmentation, tracking, reconstruction, detection, and identification methods that address unsolved plant phenotyping scenarios
- open source implementation, comparison and discussion of existing methods

#### Submission

Authors are encouraged to submit original work that has not appeared in, nor is in consideration by, other journals. Previously published conference papers can be submitted in extended form (with additional supporting experiments and a more detailed technical description of the method). All papers will be subject to expert peer review.

Further information on the process (as well any special issue related updates) are available at:

<http://www.plant-phenotyping.org/CVPPP2014-Special-Issue/>

The electronic copy of a complete manuscript (10-15 pages in the Machine Vision and Applications publication format ([http://www.springer.com/computer/image+processing/journal/138?detailsPage=plcti\\_2116423](http://www.springer.com/computer/image+processing/journal/138?detailsPage=plcti_2116423)) should be submitted through the journal manuscript tracking system at the web site: <http://www.editorialmanager.com/mvap/> indicating that the contribution is for the special issue "Computer Vision and Image Analysis in Plant Phenotyping".

#### Guest editors (alphabetical order)

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Website: <http://www.plant-phenotyping.org/CVPPP2014-Special-Issue/>

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