18 months Post-doc in Pl@ntNet team
Plant disease monitoring in crowdsourced image streams
Inra (AMAP lab) & Inria (LIRMM lab)

Project summary: One of the major difficulty encountered in plant disease epidemiology is the lack of occurrence data. Large-scale and sustainable monitoring efforts are penalized by the lack of experts and the difficulty of diagnosing plant diseases for non-experts. In this context, crowdsourcing plant observation tools (such as Pl@ntNet) could serve as a brave new monitoring methodology. Even if non-healthy plants remain a relatively rare event in such high-throughput image data stream, the number of occurrences might be sufficiently high for several monitoring scenarios. Now, automatically recognizing plant diseases in such crowdsourced image streams is a challenging computer vision problem because of the scarcity of the training data, the low inter-class variability and the rarity of the events. The original approach that we propose to solve these issues is to rely on transfer learning and pro-active learning solutions as a way to set up an innovative and participatory citizen sciences program.

Context: The candidate will work within the interdisciplinary team at the origin of the awarded Pl@ntNet platform. He will be administratively employed by Inra (www.inra.fr) in the AMAP laboratory (http://amap.cirad.fr/) but he will also closely collaborate with the Inria team ZENITH (https://www.inria.fr/equipes/zenith). She/he will benefit from a privileged scientific context at the intersection of ecology, agronomy and computer sciences. The selected candidate must start between September 2017 and December 2017, for a duration of 18 months. The candidate will work on the conception and experimentation of deep learning méethods, in the aim to evaluate the potential of automatically recognizing plant diseases in crowdsourcing context.

Candidate profile: We are looking for a highly motivated postdoctoral fellow in the field of data sciences or bio-informatics with some experience in machine learning and/or computer vision. Curiosity, open-mind, creativity, persistence, and collaborative-work ability are the key personal skills we target. A Ph.D. in computer science, bioinformatics or applied mathematics, is required, with demonstrated experience and a high quality publication record. The successful candidate should have programming skills in Python, Java or C++. A strong interest in collaborative and interdisciplinary research is required. Both beginning and more senior postdoctoral candidates are encouraged to apply.

Criteria of eligibility: The candidate should have obtained his PhD during the last 6 years. He should not have completed his PhD in a unit of the 3 following Labex (Cemeb: http://www.labex-cemeb.org/umr ; Agro : http://www.agropolis-fondation.fr/fr/labex-agro-developpement-durable/un-reseau-scientifique-de-premier-rang-mondial.html ; Numev : http://www.lirmm.fr/numev/index.php/lab-partners). If this is not a first postdoctoral, the candidate should do not have more than 1 year of post-doc in France over the last 3 years.

Contact: Please send your CV and application letter to pierre.bonnet@cirad.fr & alexis.joly@inria.fr