New PhD position

Hélène Soyeurt

January 2019 - Limit to apply : 22th February 2019

LIÈGE université Gembloux Agro-Bio Tech

Context

Dairy herd management activities have an important influence on environmental impacts of the agriculture and farming sector. The decision-making process concerning the different policies regulating those management activities could benefit from using tools that explicitly include behavioural aspects of farmers and sustainability information from the Life Cycle Assessment (LCA) point of view. Agent-Based Models are especially suited to deal with behavioural components of human decision-making. The interconnection between ABM, LCA and optimization will substantially contribute to the objective of developing a suitable approach toward low emission farming.

Simba is a joined research project between LIST (Luxembourg) and Gembloux Agro-Bio Tech (GxABT) and financed by the Belgium National Fund for Scientific Research (FNR-FNRS) and the Luxembourgish National Research Fund (FNR). Two PhD students will be enrolled in this project.

The required agent-based models will be developed by the PhD student enrolled by LIST and will be located at the Environmental Sustainability Assessment and Circularity (SUSTAIN) Unit of the Environmental Research and Innovation (ERIN) department of LIST, which is developing knowledge, transferable technologies (e.g. software) and practical methods for the integrative evaluation and management of the sustainability of human driven systems.

Gembloux Ago-Bio Tech (GxABT) is offering a 45 months (that could be extended up to 48 months) PhD position in the topic of Phenomics approach to implement agent-based models simulating economic and environmental impacts of dairy cattle management. This is the context of the current job offer. This means that the PhD student must develop machine learning procedures to predict phenotypes related to herd management and environment based on the routine data collected on farm from the routine milk recording and economic data sheets.

« Machine Learning and Data Mining to help dairy farmers to take their daily decisions. »

- Global Context

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PhD offer

- 45 months (that could be extended to 48 months)
- International and interactive environment
- Strong links with all stakeholders in dairy cattle production
- Hot topic research

Description

The candidate will conduct a PhD thesis tentatively titled “Phenomics approach to implement agent-based models simulating economic and environmental impacts of dairy cattle management”.

S(he) will interact with the PhD student enrolled in LIST to define the list of required phenotypes. Then s(he) will interact with all stakeholders representing by the Walloon Breeding Association (AWé) and its corresponding organisation in Luxembourg (CONVIS sc.) to improve her(his) knowledge of the data acquisition related to the dairy farming. Finally, s(he) will develop specific data acquisition procedures and machine learning algorithms allowing the obtaining of required phenotypes. Those predicted phenotypes will be then integrated to the calculation platform developed by the LIST PhD candidate.

Therefore, knowledge in dairy cattle system is required as well as a good ability in multivariate analysis (Data Mining and Machine Learning). A minimal knowledge of Economics principles will also be relevant for a correct understanding of the available data. In these tasks the candidate will be assisted by the PhD supervisor and other members of her(his) thesis committee as well as LIST partners.

During the course of this PhD, periodical meetings and short stays at LIST’s premises (Ettelbruck, Luxembourg) are foreseen, in order to exchange knowledge and updates about the advancement of the project and to promote cross-fertilization of the two complementary research teams.

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Contact us

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Required profile	
Educational background	The ideal candidate (M/F) holds a MSc. Degree in Engineering, Economics, Computer Science or Applied Mathematics with a background knowledge of dairy cattle management. The candidate must have also a strong background in Statistics.
Required seniority	There is no seniority requirement but the candidate could not work for the university of Liège in the past for more than 12 months.
Technical skills	Proven skills in SAS, R or Python programming applied to Data Mining and Machine Learning; Skills in dairy cattle management and production; Proven organizational skills and interdisciplinary thinking, a problem-solving mind-set, and a strong team-working capability, but is also able to work independently and creatively.
Language skills	Flawless knowledge of English (both spoken and written) is required. Knowledge of French is considered as an asset.
Starting date	Period within January and June 2019
Date to apply for this job	Until 22th February 2019

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