Data assimilation, processing, and modeling for precision farming

Topic of Post-Doctoral research in Applied Statistics at the LMBA in cooperation with Evolution, NeoVia (InVivo) and See-d

Background: The Nutgen project
The companies Evolution, NeoVia, subsidiary of the InVivo Group, See-d and the Laboratory of Mathematics of Bretagne-Atlantique (LMBA - UMR6205) embark on NutGen, a collaborative project for the development of a data management and enhancement platform intended to improve the nutritional and genetic performance of dairy cows.

In this context, the LMBA is developing innovative tools to process the data stemming from sensors located in the farms correlated with information relating to the animals' feed and genetics. The goal is to gain high value knowledge that can be used for precision monitoring and piloting of farms.

Topic
The purpose of this post-doctoral research is to use Big Data to identify the existing correlations between the animals' genetics and their nutrition.
First, typical data sets regarding genetics and nutrition, stemming from sensors, will be assessed. The data will be assessed in terms of quality (missing data, outliers), reliability (bias, variability, etc.), and volume.
Second, a state of the art analysis of the statistical and Machine Learning methods used for data with similar evaluation as that identified in the first stage will be carried out.
Finally, the links between the data regarding genetics and nutrition and those stemming from sensors will be explored, using the modeling methods identified in the state of the art analysis.

The successful candidate
Holding a doctorate in statistics, mathematics, or information technology, you enjoy developing tools to use data to bring concrete and relevant responses to issues.
You are interested in statistical inference methods, Machine Learning, mathematical modeling, structured and unstructured databases, Big Data, etc.
You are enthusiastic about developing innovative methods based upon high-level mathematical and statistical modeling and Machine Learning for a dynamic and pioneering project. Commitment and hard work are your basic values. You wish to join a multidisciplinary team including engineers, doctors, company managers, and academics, at the interface between the business and research worlds.

If you see yourself in the description above, the Université Bretagne Sud wishes to recruit you to conduct post-doctoral research for one year. Please send your application (CV, motivation letter and URL) by email to:

- Emmanuel Frénod (emmanuel.frenod@univ-ubs.fr), and,
- Gilles Durrieu (gilles.durrieu@univ-ubs.fr)

Supervision will be jointly conducted by

- the statistics and applied mathematics team at the LMBA in Vannes, and;
- See-d (www.see-d.fr) in Vannes;

and you will collaborate with

- the team led by Vincent Sincholle at NeoVia in Saint-Nolff, and;
- the team led by Johann Barbier at Evolution in Rennes.

Following your post-doctoral research, you may be offered a job in one of the organizations cited above.