

Smart AgriMatics 2014

Smart Livestock Farming Modelling Tools

Date: 19th June

Time: 2 hour session

Chairman: [Kees Lokhorst](#)

The potential of sensor-driven livestock technology on individual animal and group level is addressed in the concept of Precision Livestock Farming (PLF) where management tools aimed at continuous automatic monitoring of animal production, health and welfare in real-time are developed. To convert these data into useful information and decision support systems for farmers and service providers the development of mathematical decision support modelling (e.g. data mining and artificial intelligence), (wireless) sensor technology, ICT-infrastructure (web based, databases), standardisation (e.g. RFID) and user-centric design methods to evaluate the interest of cumulating data from different origins (biological, behavioural) and to improve the quality of the diagnosis and support are required. In this session the following presentations of 15 minutes each will be given. This will be followed by a general discussion:

Real time open data exchange with robots and sensors for livestock farming: achievements and prospects of the Animal Data Exchange initiative

E. Rehben, JP. Allard, F. van Diepen, B. van't Land, R. Rognant, A. Werner

In response to the growing difficulties met in data exchange between breeding organizations and on farm robots and/or sensors, a collaborative initiative has been launched by some manufacturers and some milk recording organizations: Animal Data Exchange (ADE). The rationale and the different phases as well as the main achievements are reviewed. The ADE architecture based on a client server approach using web services as well as its specifications in compliance with state of art standards such as "http", "Extensible Markup Language (XML)" and "SOAP" are detailed. The first provisional results of the ongoing field tests in three countries are given as well as the next steps to set up a full operational system.

Modelling in the Smart Dairy Farming project

Kirsten Huijps, Claudia Kamphuis, Pieter Hogewerf

Twelve stakeholders in the Dutch dairy sector established the Smart Dairy Farming (SDF) Consortium in 2010. The Consortium is formed by a unique combination of small and large organizations that are involved in sensor development, breeding, feed, accountancy, dairy industry, research centers and universities. SDF will develop decision models, process descriptions, practical management tools and advisory products for farmers. Projects are running on eight commercial dairy farms where real-time data are collected from existing and new sensors. These sensors can be applied to an individual cow or used in existing equipment, e.g., milk robots. In this presentation we will focus on the model development that combine these real-time data with existing static cow data to produce useful tools and SOPs. Data pre-processing, model development and validation and the transformation from static to real time modelling will be discussed.

Automated Pig Weighting based on computer vision of 2D images

Ivan Amat-Roldan, Iker Bilbao, Antoni González, Agustí Rodríguez, David Verde, Claudia Climent, Pere Alemany, Joaquim Soler, Daniel Rosés, Maurice Mergay, Johan Van den Bossche

The value of a pig carcass for meat production depends primarily on the carcass weight and on the relative proportions of fat and lean. Accurate estimation of livestock pig's weight and final carcass weight can result in significant cost savings to the livestock producer. Live weight can be accurately determined from the size measures estimated in 2D visual images of living pigs. However, this embodiment required a cage-like structure and introduction of pigs individually, being impractical in cost and time terms. Newer embodiments have been developed based on 3D imaging and have increased portability at expenses of complexity. Thanks to the push of the EU-PLF project we develop and present a new method based on computer vision and embedded data analysis that estimates pig's weight from 2D images in standard farm conditions (i.e. multiple pigs, different angles,...).

Combining multiple layered data in eCow

Toby Mottram

Within the commercial company eCow there is a specific need to combine data. There is a lack of standardisation of data transfer tools for adding multiple layers of data together. eCow has developed an XML schema for cow data which will be presented and discussed.

Cow-centric data made available in real-time for model development

Matthijs Vonder, Gerben Donker

Think big, start small. With that thought in mind, Smart Dairy Farming (SDF) is working on the development of a platform to make the real-time sensor data, from different farms, available to model developers. The data must be made available via a standard interface on an open platform in real-time at the individual animal level. The platform to be developed must furthermore be suitable for a large-scale roll-out. The concept of the InfoBroker is designed as a breakthrough when it comes to making data stored in diverse places available in an efficient manner. Data is not stored centrally, but remains at the source. The InfoBroker is capable of retrieving individual cow data from an infinite number of sources while at the same time serving a large number of models on-demand. In the InfoBroker it is specified for each farm which data may be released. This means that the farmer always stays in control.

Discussion