Dairy Farmers Dashboard

UPPSALA UNIVERSITET

Project in Scientific Computing 2020

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Gigacow

Gigacow is an infrastructural investment from the Swedish University of Agricultural Sciences seeking to enhance exchange between researchers and the industry. A farmer can choose to affiliate their farm with Gigacow and, in exchange for data, receive the following benefits:

- Prepaid genome analysis.
- A customizable dashboard showing metrics specified by the farmer.

Project Aim

The goal of the project is to create a dashboard using the collected data to help the farmers understand their farm better. This is achieved through the following steps:

- Preprocessing of the data.
- Calculation of specific values of interest to the farmer, called key values.
- Integration of the key values into the dashboard interface.
- Development of a web application to give access to the dashboard from different devices.

Key Values

In order to give the farmer an overview of the farm situation, key values are computed. These values are the most important information for the farmer and some examples are milk produced yesterday, daily average smartgate passes and daily average kickoffs. The most critical key values are the feed and milk alarms, and these communicate that there may be something wrong with the cow and that a vet check up might be necessary.

The key values are computed during the night when the daily data has been obtained. This means that the farmer can check the dashboard in the morning without delay.

Dashboard & Web Application

The Django-ECharts framework has been used to implement the dashboard interface. Some interactive features have been added for comparison of multiple diagrams. The dashboard can show more information while a chart is active by clicking on the dashboard if desired.

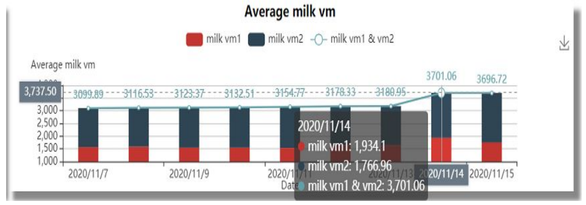

Figure 1. Comparison chart between two milking robots.

Features such as pop-up alerts and top scrolling activity reminder have also been implemented. The web application has been developed using Django and HTML.

Figure 2. The layout of the current dashboard.

Future Work

- The functions developed will be used in the Basreg and Gigacow projects. There will be need to implement further functions to analyze data not used in this project.
- Implement predictions using machine learning.
- Develop a version where data is received more often. This version could be used by the farmer for quick decisions.
- Data for cow activity and feeding could be used to predict if cows are sick.
- Milking data could be used to optimize the length of lactation periods.
- Develop a version where data is analysed over longer period of time.
- Using milking, activity and feed data as well as weather data, cows behavior in different temperature and weather could be analyzed.