

Prototyping AI algorithms realtime

Short description of the work with prototyping

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The Danish dairy sector collects a lot of data from different parts of the milk production. Farmers, milk recording, dairies, slaughterhouses, advisory services, breeding companies' veterinarians, hoof trimmers and many equipment's suppliers all deliver data to the central cattle database. The data is primarily used for descriptive and diagnostic analytics on the farm and statistical to develop the sector.

The aim of this study is to investigate whether the data could be used on farm in a more predictive manner. Five advanced algorithms were developed and included in a prototype. The algorithms used machine learning or linear dynamic modeling to give live alerts to the farmer.

The prototype included algorithms to get alert if a cow had a drop in milk or weight (Dominiak et al., 2022), algorithms trained to predict treatments of ketosis and hoofs and algorithms to alarm the farmer with an unexpected change in total amount of milk, fat, protein, or somatic cells picked up by the dairy.

The prototype was tested in 9 herds over 5 months. In the test, the algorithms were run each night on fresh data. The farmers received the results in an e-mail.

The prototype testing revealed that our algorithm on hoofs in practice had some difficulties hidden in a validation by validating by a confusion matrix. The feedback from the farmers revealed, that the farmers had fixed routines with check of lists in their management system. They did not change this for a 5-month prototyping test. The test showed that the farmers were curious about the prototype and compared the results with their norm system. The perception was that the prototype picked up the same cows as their normal management system, but that the alerts from the prototype was a little delayed.

Keywords: Prototyping, dairy cattle,

References

Dominiak, K. N, A. M. Kjeldsen, T. Andersen1 and D. B. Jensen. 2022. Early detection of abnormal weight patterns in dairy cows based on AMS weighing data. Proceedings of the 3rd International Precision Dairy Farming Conference. Vienna, Austria, 30th -2nd Sep 2022. Organized by the University of Veterinary Medicine Vienna. Page 5-6