Public Summary – BSc Assignment Feike Knol

This paper investigates the best way to inform farmers about the lameness of a cow with a user interface. On average more than 20% of all the cows on a farm suffer from lameness. Which is unpleasant for the cows and will cost a farmer approximately 75 euros per cow per year. Company X is developing a lameness detection tool that aims to combat this issue.

Company X focuses on developing technology for small to professional farms. Company X wants to improve life on the farm, and to accomplish this they provide multiple products. An example of this is their "Fitbit" for cows, with the use of sensors, individual animal behaviour can be monitored to detect health issues earlier. Besides wearable sensors, they also use camera systems in combination with Artificial Intelligence. A specific application that focuses on detecting lameness in cows. To correctly and clearly translate the gained insights into actionable insights for the farmers a UI had to be designed in Companies X website application. The application is a cloud-based website of Company X that takes all the insights from the data and creates clear actionable insights.

The main stakeholders within this project are mid-size and large professional dairy farms. The farmers and farm companies are the end users of the product. Their expertise is in livestock, particularly cows. Their feedback on the product will be of great use because the product should be easy to use and clear for the farmers. That is why during the design phase, multiple farmers will be interviewed to gain feedback on the user interface concepts.

The requirements were specified through an analysis phase including background research on lameness, meetings with Company X's experts, literature research, and a design review of the current Company X's design style. During the literature research, the ten heuristics by Jacob Nielson as well as the gestalt principles were analyzed and the Company X website was tested with these principles in the design review. The first concept sketches were created based on these requirements and the meetings with the experts from Company X. This concept included the following five pages: a dashboard, a worklist, a recovery page, a cow page and a compliance page. Based on the first concept sketches, an initial Adobe XD concept was created. Three farmers were asked to provide their opinions to validate the concept and gain valuable feedback. This was done a second time after incorporating the feedback from the initial concept into the second concept.

With all the feedback from the farmers and after some discussions with multiple experts from Company X, the design proposal was formed. This design incorporates Company X's requirements and the farmers' needs for usability. The design proposal of the user interface includes a dashboard page to view all the important insights in one go. Additionally, there is a worklist, here the farmer can view all the cows that were perceived as lame in a clear list. The worklist is supported by the cow page, here the up-to-date lameness score of all the cows can be viewed. The cows can also manually be put on the worklist. To have added insight into farm management there is a recovery and compliance page. On the recovery page, the farmer will be able to view the recovery of the trimmed cows at a farm level, pen level or even based on the type of condition of the cows. On the compliance page, the farmer can view the percentage of the cows placed on the list compared to the cows trimmed. This will give the farmer insight into how often cows are not separated correctly by employees or his sorting gates.

With the UI and the lameness detection system, the farmer would be able to lower the overall lameness on his farm as well as make any management changes to increase the productivity of the cows and the employees on the farm.