LyfeStock Project Description Summary

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Project Overview

LyfeStock provides users with real-time data surrounding the health of their livestock. The application handles the ownership of the livestock and GPS tracking to provide a full service that ensures the overall well-being and management of livestock, using modified Microchips implanted into livestock to collect biometrics about the animal, and processes it to provide useful metrics to the owner.

Project Purpose

This project is for the convenience of commercial and non-commercial livestock farmers. It will provide farmers with the means to keep track of the overall health of their animals and detect fluctuations in their health in real-time before they could potentially spread to the entire herd. The target audience is interested in maintaining a healthy stock of animals to maximize their profits in meat and dairy markets, and to monitor the spread of infectious diseases among animals up-to-date to maximize the well-being of livestock and decrease the chances of any diseases spreading to humans as a result. In combination, this will provide a higher quality of life to livestock owned by the user. The businesses that would benefit from this application are any of the major meat-producing or dairy-producing companies such as Tyson Foods Inc, Hormel Foods Corp, or Dairy Farmers of America Inc.

Scope of Work

The work here is strictly designed for the health of animals. The project would not recommend any possible avenues of treatment for each animal or attempt to branch into applications suited for humans. Currently, farms are using technology that limits their ability to monitor the health of livestock and prevent the spread of diseases. LyfeStock aims to bridge all these gaps by utilizing big data to provide live readings on possible health issues that animals might have to ensure the safety of products heading to market.

Scope of Project

The scope of the product revolves around the collection of biometric information, the calculations made to detect any abnormalities in livestock health, an alert system to notify the user of these abnormalities, and the ability to send flagged data points to expert researchers. This would not include any recommendations on how to solve these problems, as they could be caused by a multitude of factors.

Here is a sample product scenario. Jim is a South Dakota pork farmer who is a client of our product. Before doing his morning rounds, Jim checks the livestock status menu on our app to determine which pigs aren't fat enough to be slaughtered and thereby should be fed more. Opening the menu, Jim sees a red indicator on the status page of one of his pigs. Opening the pig's status menu, the symptoms of high temperature, blood loss, and rapid reduction of fat and

cholesterol levels in the blood indicate that the pig has contracted African swine fever, a deadly, hard-to-detect, highly infectious virus that affects pigs and hogs. Realizing the severity of the issue, Jim has the specific pig quarantined and all nearby pigs also checked for any symptoms, referencing the app to do so.

Stakeholders

The desired client would be a large agriculture-related or agriculture-adjacent company that deals with microchip-related technology, rather than other fields of agricultural science such as GMO (genetically modified organism) crops, pesticides, and farm equipment. An example would be an animal healthcare company like Elanco.

User Participation

End users may be contacted to assist with testing early versions of the application. As ease-of-use is important, it must be ensured that the final product is one that the targeted demographic would actually be willing to use. Discussion must be had to create a product that will fit the requirements set by the end user.

Constraints

The project must adhere to four constraints:

It must **protect user privacy**. Any issue of privacy or security breach would put the companies and users that are involved in sensitive positions and threaten their business and livelihood. Data needs to be encrypted and protected at all stages in which the application handles it.

It must **provide accurate biometric information**. Accurate data gathering is a vital part of the user-application interaction, as users will respond to any readings provided, regardless of accuracy, so accuracy is crucial so that proper action will be taken for the wellbeing of the animal.

It must **alert users quickly**. Oftentimes, the timing of diagnosis and treatment can make the difference between a small incident and a major issue when it comes to animal healthcare, so our system of alerting users to potential health issues in their livestock should be responsive to anomalous readings and prompt to alert users.

It must be **modularized.** The end user may not have enough of a budget or reason to make use of all data that is collected. The user must be able to pick and choose what data will be collected, and the application must be able to present these different choices with no noticeable slowdown on their version of the product. All classes used for data collection must be created as separate modules. The application must be able to incorporate any combination of classes created by the developer.