# INTEGRATED ANDROID APP FOR DAIRY FARMERS

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## INTRODUCTION:

Dairy farming dominates the livestock sector and is a cardinal pillar of agriculture. Dairy Farming is a class of agriculture for long-term production of milk, which is processed for eventual sale of a diary product. Dairying is an important source of subsidiary income to small/marginal farmers and agricultural labourers. The dairy farmers aim to ensure that the safety and quality of their milk will satisfy the expectations of the consumers and food industry. The introduction of mobile phones has led to the development of new services and applications in agriculture for benefit of farmers. Mobile can be a good device to get consultation and advices to improve the animal health and seek information. Nowadays, Farmers are capable of affording a smart phone with application support.

Keeping all the above facts, a need based mobile application was developed after assessing the information needs and adoption gap in the scientific management practices of the dairy farmers. The proposed system is an android application which helps the dairy farmers to assist few activities. The system consists of different modules with various functionalities. It includes modules such as disease prediction, farmer module, doctor module, local market and food supply module. The cattle disease prediction is implemented using Machine Learning technique.

## Objectives:

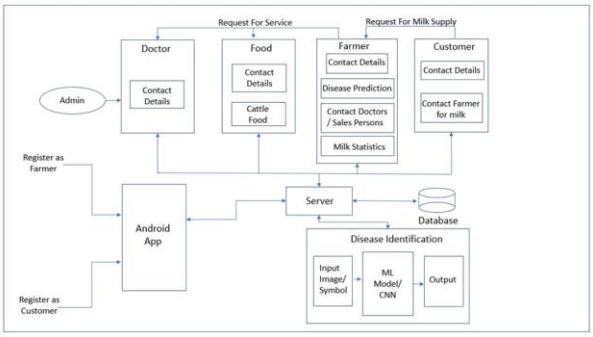
The objectives of the application are as follows,

1. To predict the cattle disease based on its symptoms using Machine Learning.
2. To provide an interface to displays the veterinary doctors list. The user can contact the doctor whenever required.
3. To enable local distribution of milk.
4. To provide milk statistics.

5. To provide information about the common cattle diseases and its symptoms.
6. To provide an interface to enable supply of local food.

Methodology:

The system consists of an interface – android application running on android device, a server to execute business logic and a database to store the data. The android app is implemented using Java and XML. The server is implemented using Django – a python framework and MySQL database is used as database.




The application – server setup is implemented as, The WSGI object is used to communicate with the code - application = get_wsgi_application(). The path() function from the django.urls allows us to create URLs. Gson (also known as Google Gson) is a small Java based library for parsing and creating JSON objects. It is a serialization/deserialization library to convert java Objects into JSON and back. Retrofit is a REST client for java and Android allowing to retrieve and upload JSON.

For the Image Based Health Status Identification we have used convolution neural network. The CNN used in this project has following configurations, Model: Sequential Model; Input shape - (64, 64, 3); Hidden Layers: Dense Layer 1 – 128 units with ReLU as an activation function. Dense Layer 2 – 1 unit with Sigmoid as an activation function.; Optimizer: Adam; Loss Function: Binary Cross Entropy; Metrics: Accuracy.

For Symptom Based Disease Prediction we have used Random Forest Classifier with 100 Decision Trees. The dataset consists of total 4920 data samples. The data is split into training and testing in the ratio 8:2, i.e. 3936 samples for training the random forest classifier and 984 samples for testing the classifier.

**Results and Conclusions:**

Mobile application is crucial to dairy farmers in improving their decision-making ability to cope up with the changes and meet future challenges of increased milk demand. Nowadays, Farmers are capable of affording a smart phone with application support. The proposed system is very useful for the real-time application. This system keeps the farmer updated. It also

provides essential information about the cattle diseases. The disease prediction module helps the user to predict the disease through the symptoms. The system enables local distribution of milk and provide milk statistics. Hence, the android application can be used by the farmers to assist the dairy management.

**Scope For Future Work:**

The system is very flexible and further modification can be made to the system for the future enhancement. The android application can be added with more features and functions.

1. The Android application may be expanded to poultry farming.
2. The system can be used to develop approach for sales of the cattle.
3. The application can be made accessible with different languages as per the user requirement.
4. The dataset used in disease prediction can be scaled with more various cattle diseases and symptoms.