# Week – 1 (Annuj Kumar – 23BCE1935)

# Architecture Diagram :-

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# Software Requirements Specification (SRS)

Project Title: AI-Based Cow and Buffalo Breed Identification System

Organization: Ministry of Fisheries, Animal Husbandry & Dairying

Prepared by: Annuj Kumar (23BCE1935)

GitHub: https://github.com/AnnujKumar23bce1935/D2\_23BCE1935\_ANNUJKUMAR/

## 1. Introduction

This Software Requirements Specification (SRS) document describes the functional and non-functional requirements of the AI-Based Cow and Buffalo Breed Identification System developed for integration with the Bharat Pashudhan App.

## 2. Overall Description

The system assists Field Level Workers (FLWs) in accurately identifying cattle and buffalo breeds using images captured in field conditions. The system uses deep learning to automate breed classification.

## 3. System Features

- Image-based breed identification

- Support for cattle and buffalo breeds

- Top-3 predictions with confidence scores

- Real-time inference support

- Feedback loop for continuous model improvement

## 4. Functional Requirements

- The system shall accept animal images from mobile devices.

- The system shall preprocess images automatically.

- The system shall classify breeds using an AI model.

- The system shall display predicted breeds with confidence scores.

- The system shall allow users to confirm or correct predictions.

## 5. Non-Functional Requirements

- Inference time shall be less than 2 seconds per image.

- Model accuracy shall exceed 85%.

- The system shall be scalable and reliable.

- The system shall ensure secure handling of data.

## 6. Hardware Requirements

GPU: NVIDIA Tesla P100 / T4  
RAM: Minimum 16 GB  
Camera: Minimum 8 MP

## 7. Software Requirements

Programming Language: Python  
Deep Learning Framework: PyTorch  
Deployment: FastAPI, Android  
Platform: Kaggle

## 8. Constraints and Assumptions

The system assumes adequate image quality and internet connectivity. Performance may vary under extreme field conditions.

## 9. Conclusion

This SRS defines the requirements for an AI-based livestock breed identification system aimed at improving data accuracy in the Bharat Pashudhan App.