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Match Maker

Dairy and Poultry Health Solutions

Feather Farms - AI based mobile application for Poultry Counting and Disease Screening

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Problem: Mycoplasmosis in Poultry

Core Challenges Poultry Farmers Face during farm management are in terms of bird counting and disease monitring

Monitoring today is:

- Manual
- Subjective
- Non-continuous

Manual Monitoring has limitations:

- Count Inaccuracy
- Cannot manually monitor thousands of birds 24/7
- Manual monitoring is time-consuming and error-prone
- Bird count errors affect feeding & management decisions

Disease Detection today is:

- Based on clinical diagonis by vets
- Other lab tests

Therefore early disease detection is a challenge since early symtpoms are hard to detect and cannot be done at farmer level

Scale and Importance of the problem

- On a global scale, 69 billion chickens are raised for meat production every year
- Poultry diseases result in over $10 billion in annual global economic losses.[1]

- Manual counting increases labor costs and leads to errors, resulting in inefficient feed use, inventory mismatches, and reduced profits.
- Late Disease Detection (Economic Loss): Late detection of diseases leads to rapid spread and higher mortality, increasing treatment costs and causing significant production and financial losses.
- Integrating AI in poultry science presents transformative opportunities for optimizing production, enhancing animal welfare and improving disease management

Technology Match Maker | DPMM | 27 Mar 2026 | Feather Farms

Existing Methods/ Solutions

Manual Monitoring (Traditional Method)- Farmer manually observes birds and records data

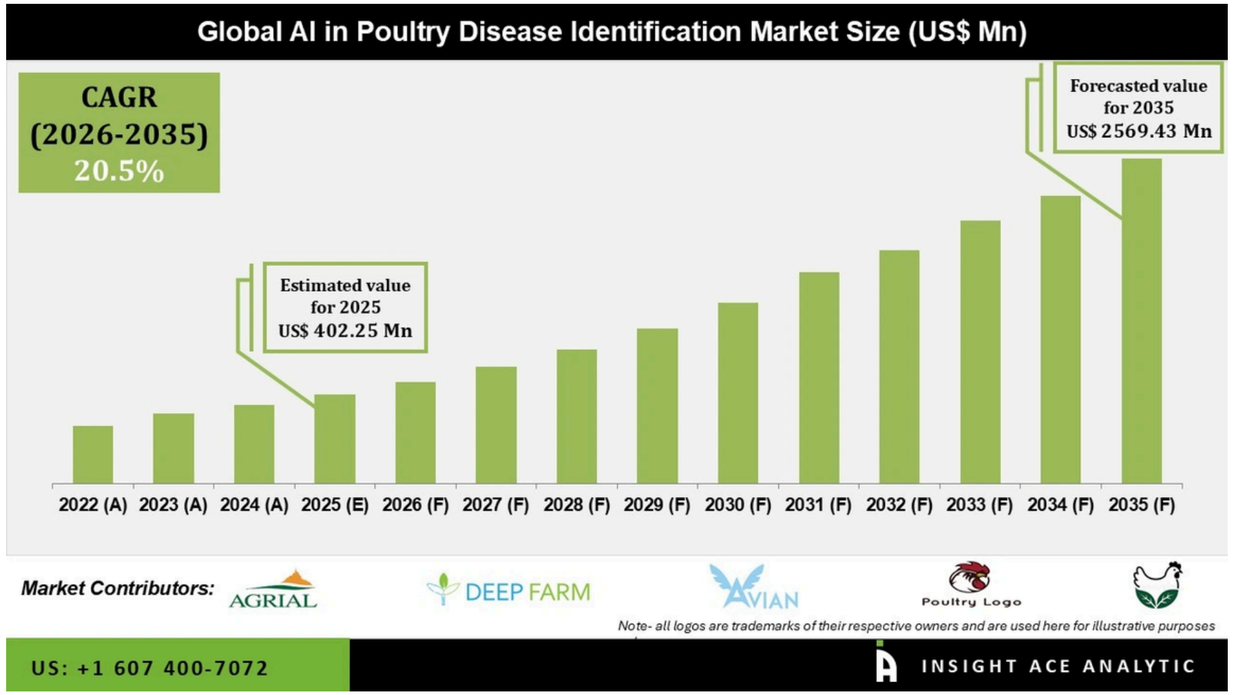
KUKU App (YOLOv3 + ResNet50) Deep learning feces detection

Phytobiotics Chicken Checker - Smartphone-based poop analysis

Pondus / FLOX AI: Camera-based monitoring

Market size and opportunity for antibiotics

Market size: Global AI in Poultry Disease Identification Market Size is valued at US$ 402.25 Mn in 2025 and is predicted to reach US$ 2,569.43 Mn by the year 2035 at an 20.5% CAGR during the forecast period for 2026 to 2035. (Source: Insight Ace)



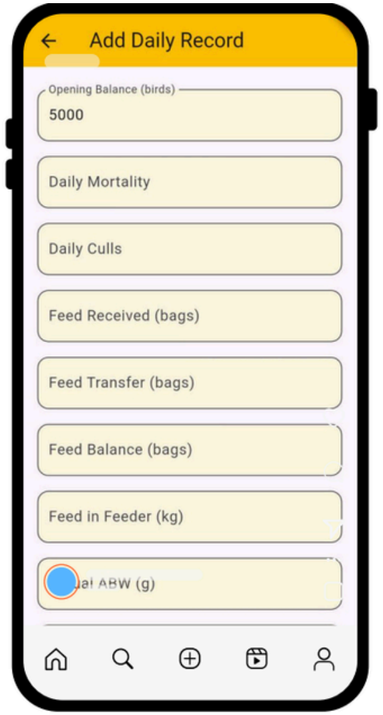
Major players: Phytobiotics (Chicken Checker), PoultryApp, Livestockify, FLOX, Smart,Avian Tech AgriAI, CluckAnalytics, AI-Poultry Diagnostics, FarmHealth, BirdSight, FarmLogix AI

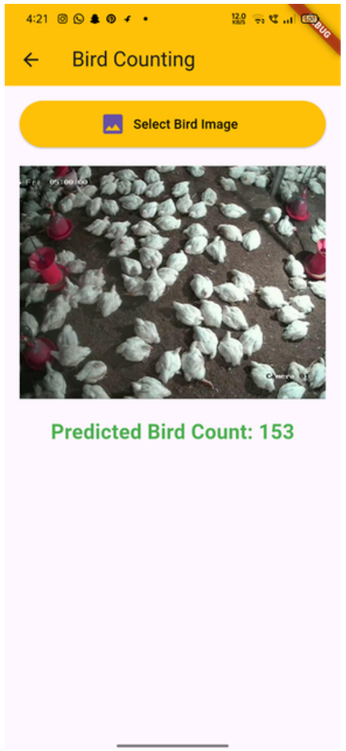
Limitations of current methods and unmet need

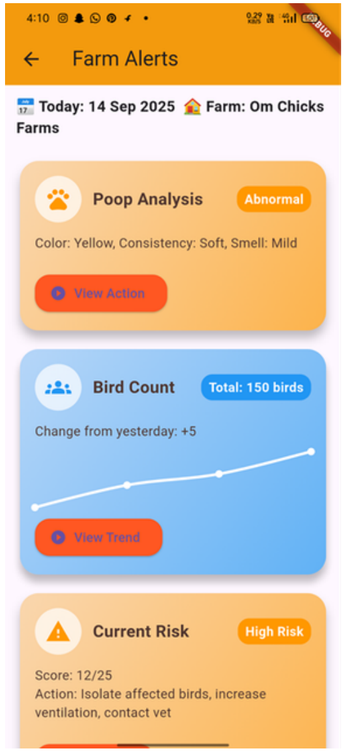
Method / Technology	Vaccines
Manual Monitoring (Traditional Method)	Time-consuming Human error No real-time Late detection Inaccurate count
Phytobiotics Chicken Checker	Only feces No counting No continuous monitoring Limited insights

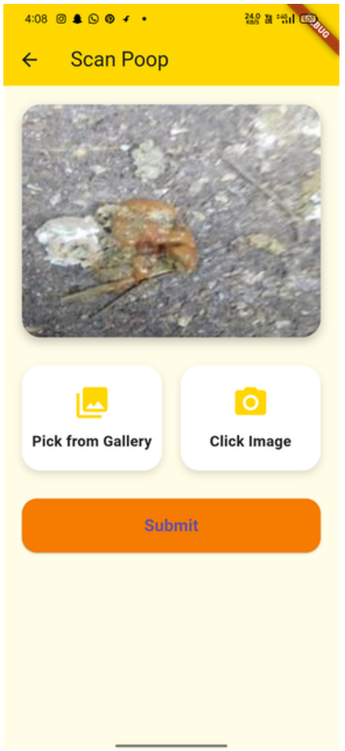
Method / Technology	Vaccines
KUKU App (YOLOv3 + ResNet50)	Prototype Controlled env No real-time No integration
Pondus / FLOX AI	Expensive Large farms only No disease detection Complex setup

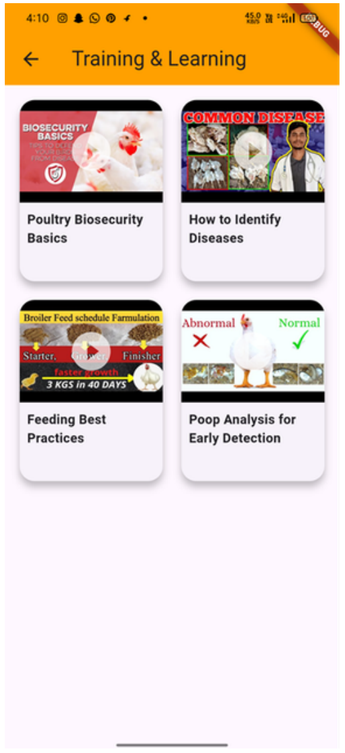
About the Technology (Frontend App)











Frontend:

- Mobile application developed using Flutter (Dart) for cross-platform compatibility.

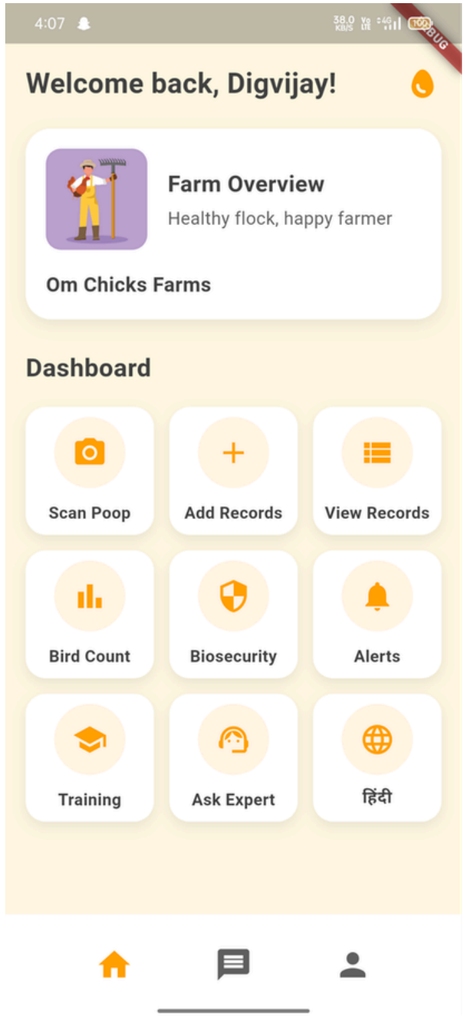
Database:

- Firebase Firestore used for storing and managing application data.

How it will work?

1. Record Digitization – Smart Farm Data Logging System
Enables farmers to digitally record daily farm data directly in the app.

Replaces traditional manual registers/paper logs with structured digital records.
Captures key daily parameters such as: Feed consumption,Water intake,Mortality count
Bird health observations



How it will work?

2. **Bird Counting – ResNet50 (Deep CNN Model)**

- Uses ResNet50, a reliable deep convolutional neural network with residual blocks.
- Suitable for detecting birds in: variable angles, mixed lighting, overlapping birds
- Trained on 2000+ bird images captured at different times (5 AM, 8 AM, 12 PM, evening).
- Capable of real-time counting from camera feed with high accuracy.

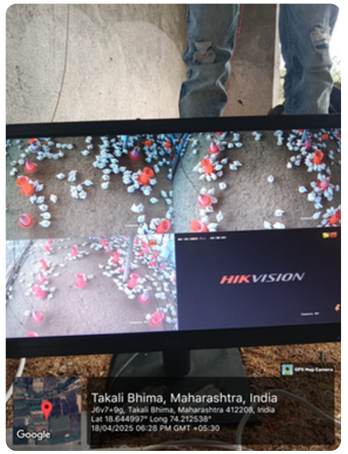
3. **Poop Detection – MobileViT (Vision Transformer Model)**

- Uses MobileViT, a Vision Transformer architecture optimized for image classification tasks.
- ViT processes images as patches and applies self-attention, giving highly accurate detection,:
- Trained on 8000+ poultry poop images (Kaggle database)
- Detects early signs of diseases such as: New Castle, coccidiosis-related droppings, Salmonella

How the AI models were trained ?

Bird Counting Dataset (Our Data Collection)

- Cameras were installed in a real poultry farm environment.
- Images of poultry sheds were captured from multiple angles and time intervals.
- Frames were extracted from the video feed.
- The dataset images were manually annotated to mark each bird.
- These annotations were used to train the ResNet50-based bird counting model.



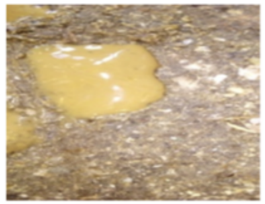


Figure 1a: Coccidiosis

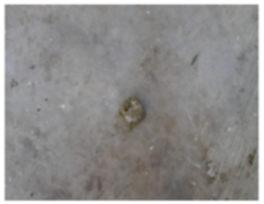


Figure 1b: Healthy

Figure 1c: New Castle

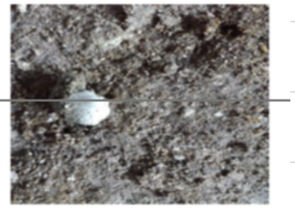


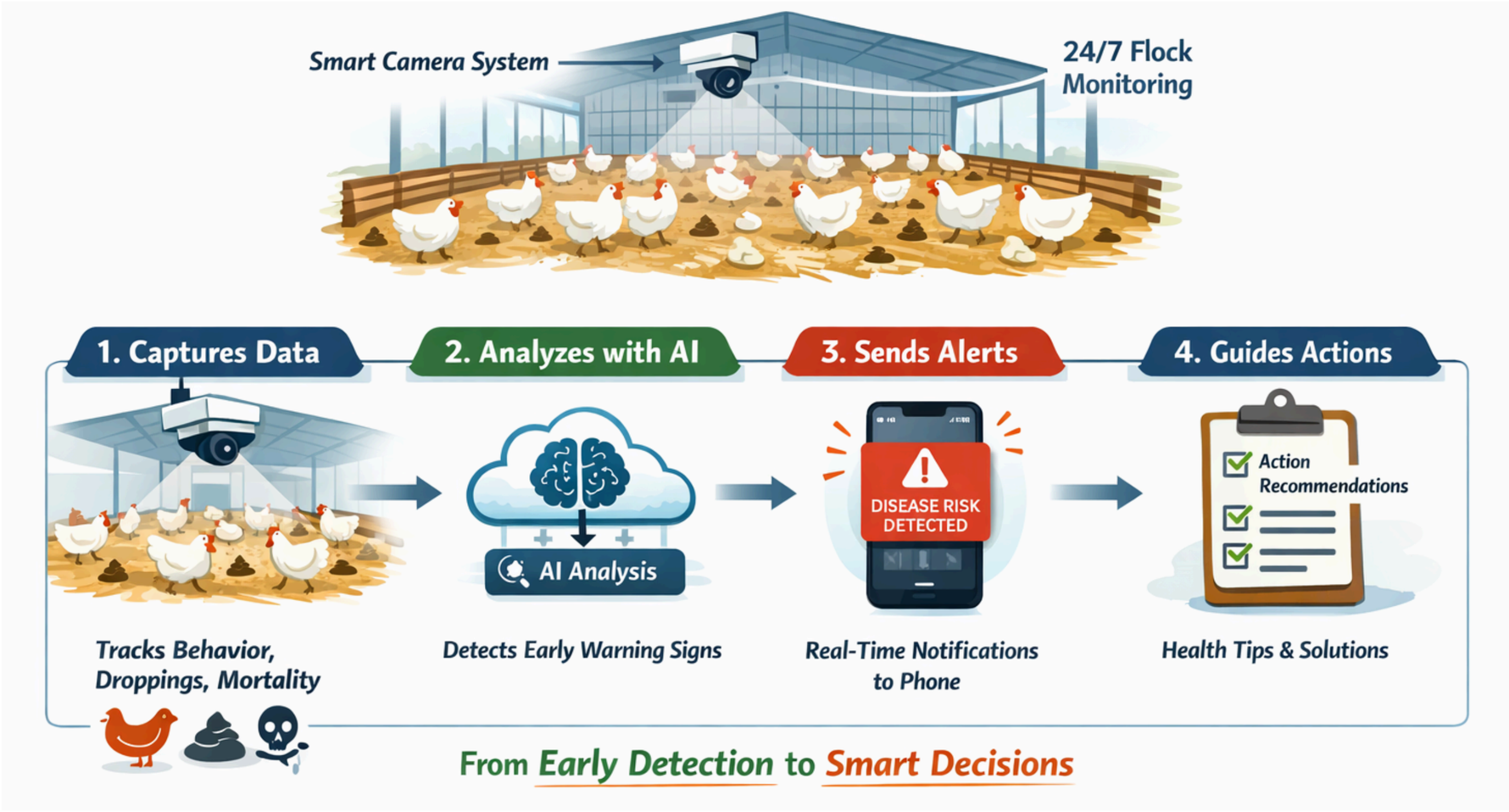
Figure 1d: Salmonella

Class	No. of Images
Coccidiosis	2476
Salmonella	2625
Newcastle Disease	562
Healthy	2404

2. Poultry Disease Image Dataset

- The dataset consists of 8,067 poultry fecal images were sourced from Kaggle database (open source)
- Images were captured by farmers and researchers using a mobile application

How it will work on actual farm?



Validation studies

1. Bird Counting Dataset : (Using manual counting)

Real poultry farm environment (MIT partner farms)

- 2,000+ annotated bird frames
- Multiple angles & time intervals
- Varied lighting conditions (5AM-evening)
- Overlapping birds & crowding scenarios

Bird counting database was validated using manual counting

Model Performance Results

Deeplearning models

Model — Accuracy
ConvNeXt-Tiny (Disease) — 97.33%
MobileNetV2 (Lightweight) — 96.75%
ResNet50 (Bird Counting) — 94.88%

2. Disease Image Dataset : 8,067 poultry fecal images (Kaggle open source)

Coccidiosis detected by AI and reported by this dataset

- 2,476 images
- Salmonella — 2,625 images
- Newcastle Disease — 562 images
- Healthy — 2,404 images

50 Images were taken for all the four sets from the Kaggle database and cross checked for classification accuracy

The results based on Kaggle dataset images and lack clinical validation

Value Proposition and Comparison

Parameters	FeatherFarms	Manual Monitoring	RFID / Tagging
Cost	Low (~₹30K camera + software)	(15000 - 35000) high labour cost	₹75,000–₹2,00,000 (tags ₹15–₹80 per bird + readers ~₹8K)
Performance	~90–98% counting accuracy + disease detection	~60–70% accuracy	~95–99% tracking accuracy
Turn around time/ Early Detection Capability	Real-time (1–5 sec processing)	30–60 minutes manual inspection	5–10 minutes scanning process
Availability of the raw material	Easily available cameras & computers	Labour dependent	RFID chips and readers required

- Continuous monitoring → No blind spots
- Flock-level visibility → Better decisions
- Automation → Reduced labour dependency
- Actionable alerts → Faster response
- Early detection → Prevent loss

Current status

Technology status:

- Status of the technology - TRL 4–5: Working prototype validated using real farm images.
- Tested on 944+ farm frames from real poultry sheds.
- Dataset trained for poop detection from 8000-image
- IP STATUS :
- Priority Date: 2025/3/25
- Coverage: India
- Patent No(Applied): 202521028161

Publications

R. S. Nair, D. Sakore, S. Christa and P. Chandre, "Comparative Analysis of Deep Learning Architectures for Poultry Fecal Disease Classification: From Convolutional Neural Networks to Transformers," 2025 IEEE 5th International Conference on ICT in Business Industry & Government (ICTBIG), Indore, Madhya Pradesh, India, India, 2025, pp. 1-5, doi: 10.1109/ICTBIG68706.2025.11323655.

Next Steps

The project team seeks collaboration with poultry industry partners for

- Pilot testing, validating system performance under real farm conditions,
- Supporting future large-scale deployment and commercialization.
- Collaborations to customize for:
- Poultry integrators (bulk deployment)
- Government schemes & subsidies
- Corporate farming operations
- Regional customizations
- API integrations with your systems

Open to Licensing

Team & Organization

Lead Inventor / Researcher

Dr. Rashmi Nai

Associate Professor,
MIT Arts, Design and Technology University. Loni Kalbhor, Pune.

Associate Professor | iOS | Apple certified trainer | DeepLearning | AWS Cloud Foundations Certified | HPC Master Trainer | Azure AI Fundamentals Certified

About the Institute

INSTITUTE / ORGANISATION NAME: MIT Arts, Design and Technology University

Team Strength : 04

Digvijay Sakore

Developer & Lead AI Engineer

Om Kale

Data Collection & Field Operations

Vedshree Patil

Data Annotation & Dataset Preparation

Mentors

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References

1. India Poultry Market Size Report
IMARC Group
Indian-poultry-market
Reports that India poultry market size = ₹2,636 billion (₹2.63 trillion) in 2025.

2. Basic Animal Husbandry Statistics – Government of India
Department of Animal Husbandry & Dairying
BasicAnimalHusbandryStatistics2025
States India produces about 5.18 million tonnes of poultry meat annually.

3. Poultry Production Data (FAOSTAT based)
Poultry-meat-production-India
Shows India produces around 5 million tonnes of poultry meat per year and ranks among the top global producers.