

Transfer Learning-Based Classification of Poultry Diseases for Enhanced Health Management

Team Name:

“The Innovation Igniters”

Team Members:

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Phase 1: Brainstorming & Ideation

Problem Statement: Poultry farmers face difficulties in identifying diseases in chickens early, which can lead to large-scale infections and economic losses.

Proposed Solution : We propose an AI-based image classification system using Transfer Learning (ResNet50) to detect poultry diseases such as Coccidiosis, Salmonella, and Newcastle Disease from images.

Target Users: Poultry farmers, veterinarians, and agricultural researchers.

Expected Outcome: An easy-to-use web platform where users can upload a poultry image and receive instant disease classification feedback.

Phase 2: Requirement Analysis

Technical Requirements:

- Python, Flask
- TensorFlow / Keras
- HTML, CSS (for frontend)
- ResNet50 model
- VS Code is used for model training and also for creation of web interface

Functional Requirements:

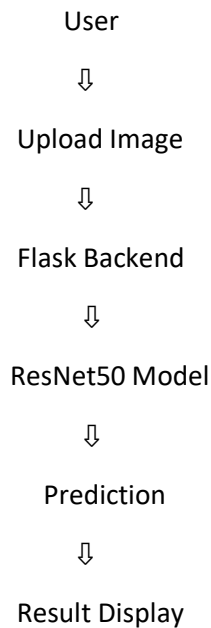
- Upload image
- Predict disease using trained model
- Display result

Constraints & Challenges:

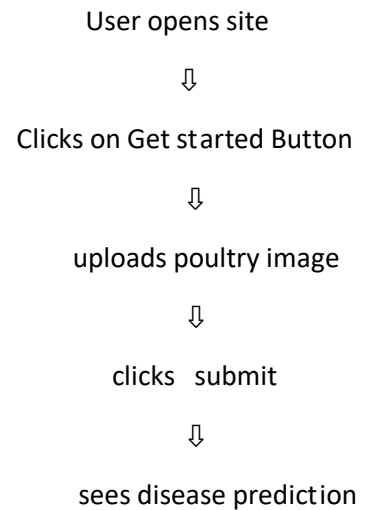
- Model accuracy depends on dataset quality.
- Limited labelled images for some rare diseases.

Phase 3: Project Design

- **System Architecture Diagram:**



- **User Flow:**



UI/UX Considerations:

- Simple upload form with image preview
- Predict button
- Result section with Disease Name

Phase 4: Project Planning (Agile Methodologies)

- **Sprint Planning:**

- Week 1: Dataset collection & preprocessing
- Week 2: Model training and tuning
- Week 3: Flask integration
- Week 4: Frontend + Testing + Deployment

- **Task Allocation:**

- Member A: Model training

- Member B: Flask backend
- Member C: Frontend UI
- Member D: Documentation & Testing

- **Timeline & Milestones:**
 - Milestone 1: Dataset ready (Week 1)
 - Milestone 2: Model trained (Week 2)
 - Milestone 3: Web integration (Week 3)
 - Milestone 4: Testing + Report (Week 4)

Phase 5: Project Development

- **Technology Stack Used:** Python, Flask, TensorFlow/Keras, ResNet50, HTML/CSS
- **Development Process:**
 - Trained ResNet50 on poultry dataset
 - Created app.py with prediction route
 - HTML templates for UI
 - Uploaded image saved and pre-processed
 - Model predicts and result shown on predict.html

Challenges & Fixes:

- ResNet50 needed image shape fixing → solved with `img_to_array` & resizing
- File not saving correctly → fixed with `os.path.join()`
- Styling issues fixed via HTML template updates

Phase 6: Functional & Performance Testing

Test Cases Executed:

- Uploaded valid/invalid image formats
- Checked correct predictions for known test images
- UI responsiveness and error handling

Bug Fixes & Improvements:

- Fixed image upload not found bug
- Added image preview and file name display
- Improved styling for better UX

Final Validation:

- Project meets objectives of classifying poultry disease accurately
- Easy for non-technical users