

# **DogHealth AI: Early Disease Detection for Dogs Using** **Advanced Computer Vision**

DogHealth AI is an innovative solution that uses advanced AI and computer vision techniques to predict and detect skin diseases in dogs through image analysis. Our system analyzes images of dogs to identify potential health issues early, improving treatment outcomes and pet well-being.

## **Team/Individual Details**

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Our solution uses a fine-tuned **InceptionV3 convolutional neural network** implemented in Python with TensorFlow to analyze dog images. The model.ipynb file handles data preparation, model training, and fine-tuning, while app.py creates a user-friendly Streamlit interface for easy interaction with the trained model.

## **Expected Results:**

DogHealth AI aims to achieve:

- High accuracy in disease detection (current validation accuracy: to be filled based on your final model performance)
- Rapid diagnosis (< 1 second per image analysis)
- Improved early detection rates for common dog skin diseases
- User-friendly interface for both pet owners and veterinarians

## **Stage of Development:**

Prototype/Proof of Concept. The model has been trained and a functional web application has been developed.

## **Critical Success Factors and Timeline:**

1. Data collection and preprocessing (Completed)
2. Model development and training (Completed)
3. Web application development (Completed)
4. User testing and feedback (Next 1-2 months)
5. Model refinement based on feedback (2-3 months)

## 6. Beta launch (3-4 months)

### **Key Benefits:**

- Early skin disease detection leading to better treatment outcomes
- Reduced veterinary costs through preventive care
- Improved dog health and well-being
- Support for veterinarians in diagnosis
- Accessible tool for pet owners to monitor their dog's health

### **Product Name:**

DogHealth AI

### **Underlying Technology:**

- Computer Vision
- Deep Learning (InceptionV3 architecture)
- TensorFlow and Keras for model development
- Streamlit for web application development
- Python for backend processing

### **Market Deployment:**

Currently in prototype stage, it is deployed on Streamlit.

Github code: <https://github.com/akhilesh1709/PetPonks-AI-competition/>

Streamlit code: <https://petponks-ai-competition-uc5xwa6ltapejqlradodcu.streamlit.app/>

### **IT Infrastructure:**

- Cloud computing platform for model hosting (e.g., AWS, Google Cloud)
- Streamlit for web application
- Local storage for the trained model
- Potential database integration for storing analysis results (not implemented in current version)

### **Process Flow:**

1. User uploads dog image through Streamlit interface
2. Image is preprocessed and fed into the AI model
3. Model analyzes image and returns prediction with confidence score
4. Results are displayed to user with disease information

**Competitive Advantages:**

- Uses state-of-the-art InceptionV3 architecture
- Focuses specifically on dog skin diseases
- User-friendly interface accessible to both pet owners and professionals
- Provides confidence scores and disease descriptions

**Unique Value Proposition:**

DogHealth AI combines cutting-edge AI with an intuitive interface, providing rapid, accurate skin disease prediction for dogs, empowering both pet owners and veterinarians with instant, informative results.

**Core Team Details:**

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**Key Risks and Mitigation:**

- Risk: Limited dataset may affect model generalization
  - Mitigation: Continuous model training with diverse datasets
- Risk: Misuse by substituting professional veterinary care
  - Mitigation: Clear disclaimers and education on the app's limitations

**Challenges and Overcoming Them:**

- Challenge: Ensuring model accuracy across different dog breeds and skin conditions
- Solution: Implement continuous learning and periodic model updates
- Challenge: Balancing app simplicity with comprehensive disease information
- Solution: Utilize expandable UI elements to provide detailed information on demand

This proposal outlines a promising AI-driven solution for dog health monitoring, leveraging advanced computer vision techniques and a user-friendly interface. The project demonstrates significant potential in the pet healthcare technology sector.