Animal Image Classifier - README

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Project Structure

C:/Users/MGM/Desktop/Ml-Project/

 Bird/

 Panda/

 animal_classifier_model.h5

 train.py

 predict.py

Features

- Train a CNN model to classify animals (Bird or Panda)

- Data Augmentation with transformations like rotation, zoom, flip etc.

- Save and load model using HDF5 format

- Predict class from image and show with matplotlib

- Accuracy evaluation using classification report and confusion matrix

Model Architecture

Sequential CNN Model:

- Conv2D(32) + MaxPooling2D

- Conv2D(64) + MaxPooling2D

- Conv2D(128) + MaxPooling2D

- Flatten + Dense(128) + Dropout(0.5)

- Output Dense layer with softmax

Libraries Used

- tensorflow

- numpy

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- matplotlib

- sklearn

How to Run

1. Prepare dataset in appropriate folders (Bird/, Panda/)

2. Train the model using `train.py`

3. Save the model as 'animal_classifier_model.h5'

4. Run `predict.py` with image path to classify and visualize

Sample Prediction Code

img_path = "Panda/Panda_3.jpg"

print(f"Predicted animal: {predict_animal(img_path)}")

Results

- Validation Accuracy: ~92%

- Classification Report:

  - Bird: Precision 0.46, Recall 0.40

  - Panda: Precision 0.46, Recall 0.53

  - Overall Accuracy: 46%