Project Design Phase-II
Data Flow Diagram & User Stories

Date	04 November 2023
Team ID	592230
Project Name	Dog breed identification using transfer learning
Maximum Marks	4 Marks

Data Flow Diagrams:-

A data flow diagram for dog breed identification using transfer learning can illustrate the flow of data and processes involved in the system. Here's an outline:

 Dog Breed Identification using Transfer Learning Data Flow Diagram

1. Data Collection and Preprocessing:

  - Input:Raw image dataset of various dog breeds.

  - Process:

    - Data collection involves acquiring images from diverse sources or datasets (e.g., ImageNet, Kaggle dog breed datasets).

    - Preprocessing includes resizing images to a standard size, normalization, and potentially augmenting the dataset (e.g., rotation, flipping) to increase diversity and robustness.

  - Output: Preprocessed dataset with labeled dog breed images.

2. Transfer Learning Model Setup:

 - Input: Preprocessed image dataset.

 - Process:

   - Use a pre-trained deep learning model (like VGG, ResNet, Inception, etc.) that has been trained on a large general dataset (e.g., ImageNet).

   - Freeze most layers of the pre-trained model to retain learned features and fine-tune the last few layers (or add new layers) for the specific dog breed identification task.

 - Output:Transfer learning model architecture ready for training.

3. Model Training:

 - Input:Preprocessed dataset, Transfer Learning Model.

 - Process:

   - Train the modified model on the preprocessed dataset. The model will learn to distinguish between different dog breeds using the transferred knowledge from the pre-trained model.

   - Fine-tune the model's weights and optimize it for the specific dog breed identification task.

 - Output: Trained transfer learning model for dog breed identification.

4. Model Evaluation:

- Input:Trained model, Validation dataset (separate from training data).

- Process:

   - Evaluate the model's performance using metrics like accuracy, precision, recall, and F1-score on the validation dataset.

   - Analyze the model's ability to correctly identify dog breeds.

- Output: Evaluation metrics, insights into model performance.

5. Deployment:

- Input: Trained model, New images for prediction.

-Process:

   - Deploy the trained model to an application, website, or system where users can input images.

   - The model predicts the dog breed in the provided image based on its learned features and trained knowledge.

- Output:Predicted dog breed label for input images.

6. Monitoring and Improvement:

- Input: User feedback, Additional data.

- Process:

- Continuously monitor the model's predictions and gather user feedback.

- Collect new data to improve the model's accuracy or to update the model with more recent information.

- Output: Improved model versions or fine-tuned parameters.

This data flow diagram outlines the flow of data and operations involved in building a dog breed identification system using transfer learning, starting from data collection to model deployment and potential improvements based on ongoing monitoring and feedback.

Folder contains
dog images
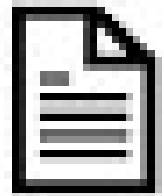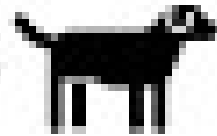
Download and
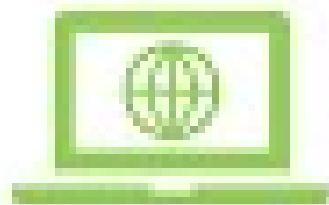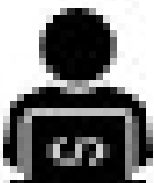load dog dataset
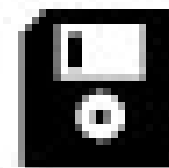with images
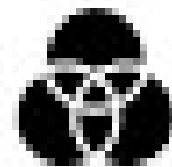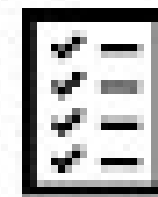
Pre-processing

Repeating with different
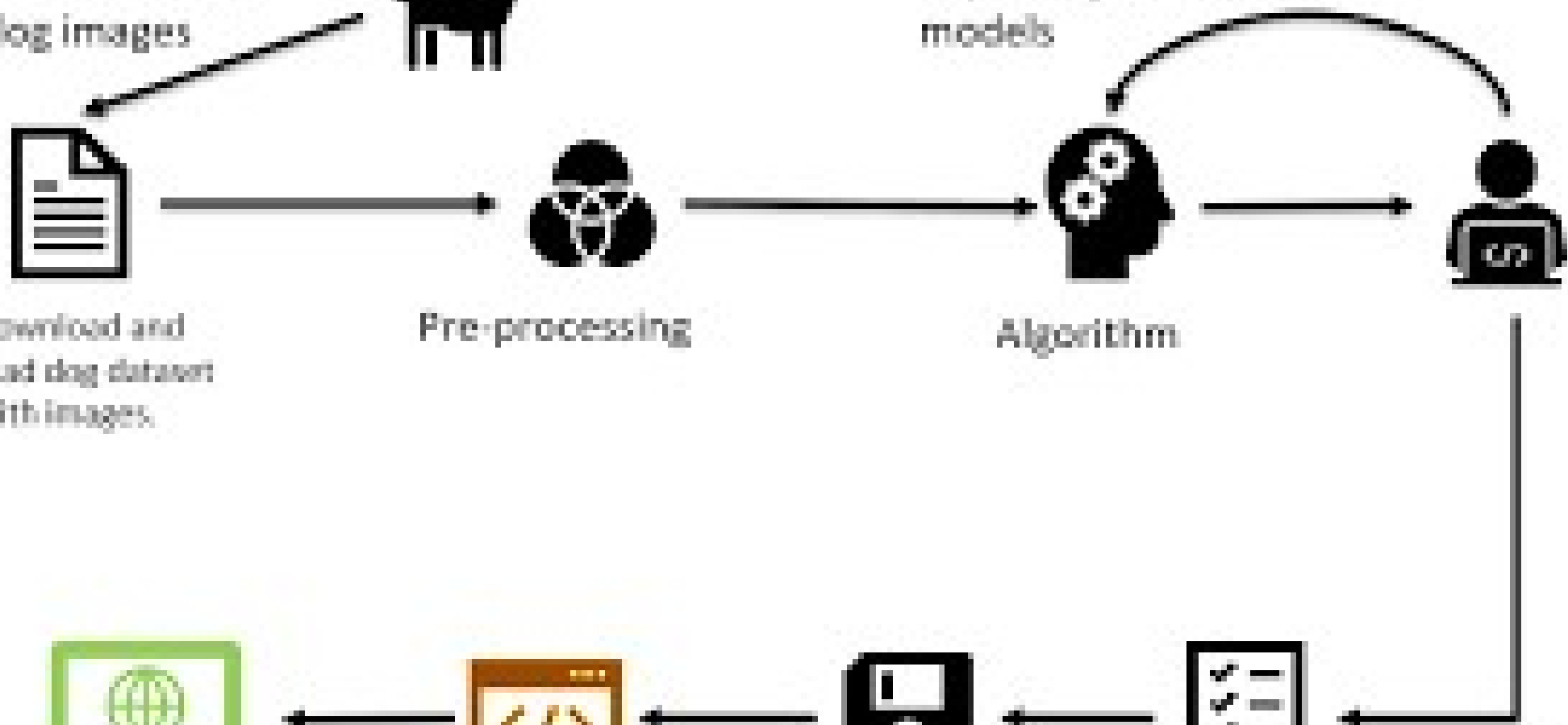models

Algorithm

Deploy the model

Integrates with
flask application

Save the
model

Test and train
the model

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard					