DATE	28-02-2026
TEAM ID	LTVIP2026TMIDS90703
PROJECT NAME	Dog breed identification using transfer learning
MAXIMUM MARKS	5 MARKS

4.2 - Proposed Solution

The proposed solution for the Dog Breed Identification using Transfer Learning project is to develop an intelligent, automated image classification system capable of accurately identifying dog breeds from digital images. The system is designed using deep learning techniques, specifically transfer learning, to ensure high accuracy, reduced training time, and efficient deployment.

The solution is built upon a pre-trained Convolutional Neural Network (CNN) architecture that has been previously trained on large-scale image datasets such as ImageNet. These pre-trained models have already learned general visual features such as edges, textures, shapes, and object patterns. Instead of training a neural network from scratch, the proposed system reuses these learned features and fine-tunes the final layers to classify specific dog breeds. Architectures developed by the Visual Geometry Group, such as VGG models, are suitable choices due to their strong feature extraction capabilities.

The system workflow begins with the user uploading a dog image through a web-based interface. The uploaded image undergoes preprocessing steps, including resizing to a standard input size, normalization of pixel values, and formatting compatible with the CNN model. These preprocessing steps ensure that the image data is consistent with the model's training requirements and improves

The proposed solution also emphasizes scalability and maintainability. Additional dog breeds can be incorporated into the dataset, and the model can be retrained or fine-tuned further to improve performance. The architecture supports enhancements such as displaying confidence scores, providing breed information, or extending the system to mobile platforms.

In conclusion, the proposed solution leverages transfer learning and deep learning technologies to build a robust, accurate, and efficient dog breed identification system. By combining advanced image classification techniques with a user-friendly web interface, the system effectively addresses the limitations of manual breed identification methods and provides a reliable AI-driven solution for real-world applications.