Model Optimization and Tuning Phase Template

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Team ID	SWTID1720420728
Project Title	Dog Breed Identification Using Transfer Learning
Maximum Marks	10 Marks

Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining neural network models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Hyperparameter Tuning Documentation (8 Marks):

Model	Tuned Hyperparameters

VGG19	`# **********`
	`vgg=VGG19(input_shape=Image_size, weights='imagenet', include_top=False)`
	
	input_shape: This parameter defines the shape of the input images that the VGG19 model will expect. It typically takes the form (height, width, channels). For example, if your images are 224x224 pixels with 3 color channels (RGB), you would specify input_shape= (224, 224, 3).
	
	weights='imagenet': This parameter specifies that you want to initialize the model with weights pre-trained on the ImageNet dataset. ImageNet is a large-scale dataset with millions of labeled images across thousands of classes. Pre-trained weights can provide a good starting point for training on your own dataset, especially when you have limited training data.

	include_top=False: This parameter determines whether to include the fully connected layers at the top of the network. By setting it to False, you're excluding these layers, which means you'll only get the convolutional base of the VGG19 model. This is useful when you're using the model for tasks like feature extraction or transfer learning, where you'll add your own custom layers on top of the pre-trained convolutional base.

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
VGG19	Hyperparameter tuning for VGG19 involves optimizing parameters like learning rate, batch size, regularization, and more. VGG19's depth and proven performance in image classification tasks justify its selection as the final model.