Model Development Phase Template

Date	16 july 2024
Team ID	SWTID1720418653
Project Title	Crystal Clear Vision: Revolutionizing Cataract Prediction through Transfer Learning Mastery
Maximum Marks	5 Marks

Model Selection Report

In the model selection report for future deep learning and computer vision projects, various architectures, such as CNNs or RNNs, will be evaluated. Factors such as performance, complexity, and computational requirements will be considered to determine the most suitable model for the task at hand.

Model Selection Report:

Model	Description
VGG16	VGG16 is a convolutional neural network developed by the Visual Geometry Group (VGG). It is characterized by its simplicity, using only 3x3 convolutional layers stacked on top of each other, followed by fully connected layers. Despite its simplicity, VGG16 has proven to be very effective, achieving high accuracy in image classification challenges. The network consists of 16 weight layers and is known for its uniform architecture and depth, making it a popular choice for transfer learning applications.
VGG19	VGG19 is an extension of the VGG16 architecture developed by the Visual Geometry Group (VGG). It consists of 19 weight layers, including 16 convolutional layers and 3 fully connected layers. Similar to VGG16, it uses 3x3 convolutional filters stacked on top of each other, which allows it to capture complex features and patterns. VGG19 is known for its simplicity and depth, which contribute to its

	strong performance in image classification tasks. Despite having more parameters, it has become a popular choice for research and applications involving transfer learning.
MobileNet	MobileNet is a family of lightweight deep neural networks designed by Google for efficient execution on mobile and embedded devices. It employs depthwise separable convolutions to reduce the number of parameters and computational load significantly, making it ideal for resource-constrained environments. MobileNet achieves a good trade-off between accuracy and efficiency, making it widely used in applications like object detection, face recognition, and other real-time image processing tasks on mobile platforms.
InceptionNet	InceptionNet, also known as GoogLeNet, is a deep convolutional neural network (CNN) introduced by Google. Its architecture is notable for its inception modules, which concatenate multiple convolutional layers with different filter sizes within the same module. This approach allows the network to capture various spatial hierarchies and reduces the computational cost by using 1x1 convolutions for dimensionality reduction. InceptionNet achieves high accuracy in image classification tasks with fewer parameters compared to earlier architectures.
XceptionNet	XceptionNet, or Extreme Inception, is an advanced version of InceptionNet .It replaces the standard inception modules with depthwise separable convolutions, which factorize a convolution into a depthwise convolution and a pointwise convolution. This design reduces the number of parameters and computations while maintaining high performance. XceptionNet has been shown to outperform InceptionV3 on several image recognition benchmarks, demonstrating the effectiveness of this architecture.
resNet	ResNet, or Residual Network, addresses the vanishing gradient problem in deep networks by using residual learning. Its key innovation is the residual block, which allows the network to learn residual functions with reference to the layer inputs, instead of learning unreferenced functions. This enables the construction of very deep networks, with some versions having over 100 layers, without suffering from degradation in performance. ResNet models are highly effective in image classification, detection, and segmentation tasks.