

Model Development Phase Template

Date	19 March 2024
Team ID	SWTID1720165000
Project Title	CovidVision: Advanced COVID-19 Detection From Lung X-Rays With Deep Learning
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
Model 1	<p>EfficientNetB0:</p> <p>EfficientNet is a family of convolutional neural networks (CNNs) developed by Google. The main innovation of EfficientNet is its compound scaling method that uniformly scales all dimensions of depth, width, and resolution using a simple yet effective compound coefficient. This results in a more efficient network that balances the trade-offs between model accuracy and computational cost.</p> <p>Architecture: EfficientNet uses a mobile inverted bottleneck MBConv and applies compound scaling.</p> <p>Advantages: High accuracy with fewer parameters and FLOPS compared to other models.</p>

	<p>Applications: Image classification, object detection, and semantic segmentation.</p>
Model 2	<p>Xception:</p> <p>Xception (Extreme Inception) is an extension of the Inception architecture that replaces the standard Inception modules with depthwise separable convolutions. This modification leads to a more efficient model in terms of both performance and computational cost.</p> <p>Architecture: Xception stands for "Extreme Inception," and its main feature is the use of depthwise separable convolutions.</p> <p>Advantages: High performance with fewer parameters and efficient use of computational resources.</p> <p>Applications: Image classification, transfer learning for other computer vision tasks.</p>
Model 3	<p>VGG16:</p> <p>VGG16 is a deep convolutional neural network developed by the Visual Geometry Group (VGG) at the University of Oxford. It is characterized by its simplicity and depth, using 16 weight layers with small (3x3) convolutional filters.</p> <p>Architecture: Consists of 13 convolutional layers and 3 fully connected layers, with 138 million parameters.</p> <p>Advantages: Simplicity and effectiveness, widely used as a backbone in various applications.</p> <p>Applications: Image classification, feature extraction for other tasks.</p>
Model 4	<p>Inception</p> <p>Inception is a deep learning architecture also known as GoogLeNet. The key innovation of the Inception architecture is the use of Inception modules, which allow the network to capture multi-scale features by applying multiple filters of different sizes simultaneously.</p>

	<p>Architecture: Combines 1x1, 3x3, and 5x5 convolutions within the same module, along with max pooling.</p> <p>Advantages: Efficient in terms of parameter usage and computational cost while maintaining high accuracy.</p> <p>Versions: Inception-v1, v2, v3, and v4, with each iteration improving the performance and efficiency.</p> <p>Applications: Image classification, object detection, and various computer vision tasks.</p>
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