

## Model Development Phase Template

Date	11 July 2024
Team ID	SWTID1719992739
Project Title	Visual Diagnostics: Detecting Tomato Plant Diseases through Leaf Image Analysis
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
ResNet152V2 (Used in our model)	ResNet152V2 is a deep convolutional neural network with 152 layers, designed for image recognition. It improves upon the original ResNet by using pre-activation (batch normalization and ReLU before convolutions) and residual connections, enhancing training stability and performance. It's highly effective for tasks like object detection and image classification.  ( Epoch 15 – loss: 0.0148 , accuracy- 0.9952, val_loss- 0.0656,val_accuracy- 0.9790, Training Time :- 3 hrs)
Mobilenetv2	MobileNetV2 is a lightweight convolutional neural network designed for mobile and edge device applications. It uses depthwise separable convolutions to reduce computational complexity and introduces inverted residuals and linear bottlenecks to improve efficiency and accuracy. With 53 layers, MobileNetV2 is

	<p>effective for tasks like image classification, object detection, and semantic segmentation on resource-constrained devices.</p> <p>(Epochs-loss: 0.0148, accuracy: 0.9952, val_loss: 0.0656, val_accuracy: 0.9790, training time: 3.5 hrs)</p>
DenseNet	<p>DenseNet (Dense Convolutional Network) features a unique architecture with dense connectivity, linking each layer to every other layer. This design improves gradient flow, encourages feature reuse, and reduces the number of parameters, enhancing efficiency. DenseNet has variants such as DenseNet-121, DenseNet-169, DenseNet-201, and DenseNet-264, named according to the number of layers they contain. DenseNet is highly effective for image classification, object detection, and segmentation tasks</p> <p>(Epochs-loss: 0.0148, accuracy: 0.9952, val_loss: 0.0656, val_accuracy: 0.9790, training time: 4 hrs)</p>