Model Development Phase Template

Date	7 July 2024
Team ID	SWTID1720076593
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
Model 1	**Description**: • **Learning Rate**: A smaller learning rate (0.0001) means the model learns slowly but accurately, making better adjustments to improve over time. • **Batch Size**: The model updates its learning every 32 samples, which balances the learning process and computing power needed. • **Number of Epochs**: The model goes through the entire training data 15 times, which helps it learn well without learning too much noise from the data. **Accuracy**: 0.9871

	Tuned Hyperparameters: 1. **Learning Rate**: 0.0001 2. **Batch Size**: 32 3. **Number of Epochs**: 15
Model 2	**Description:** • **Learning Rate**: Adjusted to 0.001 to allow finer updates to the model weights, improving convergence. • **Batch Size**: Increased to 64 to improve the stability of the gradient estimates. • **Dropout Rate**: Set to 0.3 to prevent overfitting by randomly setting a fraction of input units to 0 at each update during training. **Accuracy: 0.9359** **Tuned Hyperparameters:** 1. **Learning Rate**: 0.001 2. **Batch Size**: 64 3. **Dropout Rate**: 0.3
Model 3	**Description**: • **Learning Rate**: Reduced to 0.00005 to make very precise adjustments, helping the model learn with high accuracy. • **Batch Size**: Increased to 128, allowing the model to use more data at once, which helps stabilize and improve learning. • **Number of Layers**: Increased to 5, enabling the model to learn more detailed and complex features. **Accuracy: 0.8942** **Tuned Hyperparameters:** 1. **Learning Rate**: 0.00005 2. **Batch Size**: 128 3. **Number of Layers**: 4