

## Model Optimization and Tuning Phase Template

Date	25/02/2026
Team ID	LTVIP2026TMIDS79278
Project Title	Electric Motor Temperature Prediction using Machine Learning
Maximum Marks	10 Marks

### Model Optimization and Tuning Phase

#### Electric Motor Temperature Prediction: Model Optimization and Tuning Phase

The model optimization and tuning phase is critical for enhancing the performance of machine learning models used for predicting electric motor temperature. This phase involves selecting the best model, fine-tuning hyperparameters, and validating the model to ensure robustness.

#### Hyperparameter Tuning Documentation (6 Marks):

Model	Tuned Hyperparameters	Optimal Values
Model 1	<p>Once you complete the model optimization and tuning phase, you'll end up with a set of hyperparameters that yield the best performance for your selected models. Below are examples of tuned hyperparameters for common models used in predicting electric motor temperature. •</p> <p><b>Learning Rate:</b> This dials in how much the model adjusts per training step. Too high and it misses the sweet spot, too low and learning takes forever.</p>	<p>optimal hyperparameter values for various models used in predicting electric motor temperature. These values are examples based on typical tuning results. Actual optimal values may vary depending on your dataset and specific tuning processes.</p>

**Performance Metrics Comparison Report (2 Marks):**

Model	Baseline Metric	Optimized Metric
Model 1	Fraud Rate (...)	AUC-ROC (Area Under the Receiver Operating Characteristic Curve)

**Final Model Selection Justification (2 Marks):**

Final Model	Reasoning
Model 1	Selecting the final model for electric motor temperature prediction involves considering multiple factors, including performance metrics, complexity, interpretability, and computational efficiency. Here's a structured reasoning for the final model selection process.