

## Model Optimization and Tuning Phase Template

Date	15 July 2024
Team ID	740108
Project Title	Octagon Oracle: Machine Learning-Powered UFC FIGHT FORECAST
Maximum Marks	10 Marks

### Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

### Hyperparameter Tuning Documentation (6 Marks):

Model	Tuned Hyperparameters	Optimal Values
Random Forest	n_estimators, max_depth, min_samples_split	200, 20, 2
Decision Trees	max_depth	10

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

Model	Baseline Metric	Optimized Metric
Random Forest	Accuracy: 0.9923	Accuracy: 0.9923
Decision Trees	Accuracy: 0.9947	Accuracy: 0.9947

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

Final Model	Reasoning
Decision Trees	Chosen for its higher accuracy (0.9947) compared to Random Forest (0.9923) and simplicity.